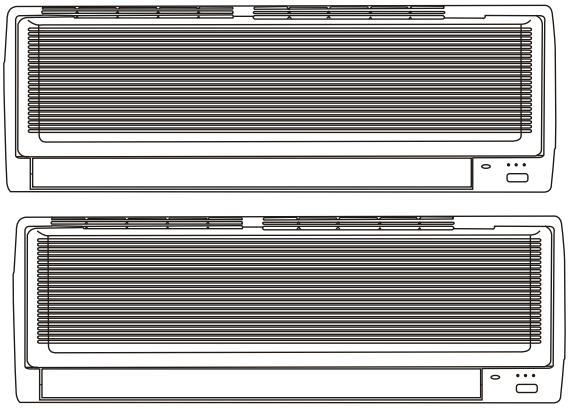
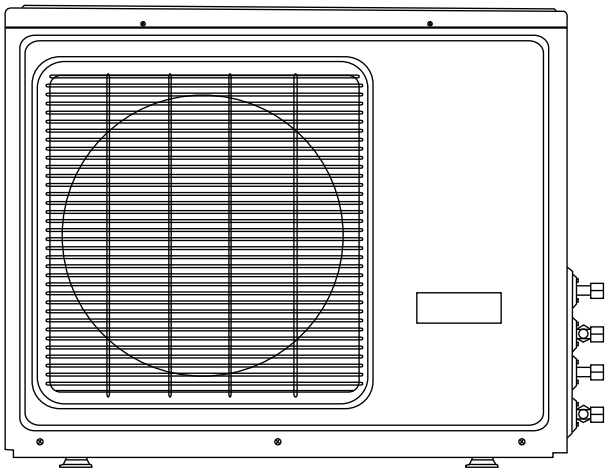
Haier

Domestic Air Conditioner

SERVICE MANUAL





Models :

H2SM-14HC03/R2

H2SM-18HC03/R2

Features

- Comfortable:wide-angle airflow
- Health air purifying
- Quiet operation
- Engergy efficient
- Wide variety of functions

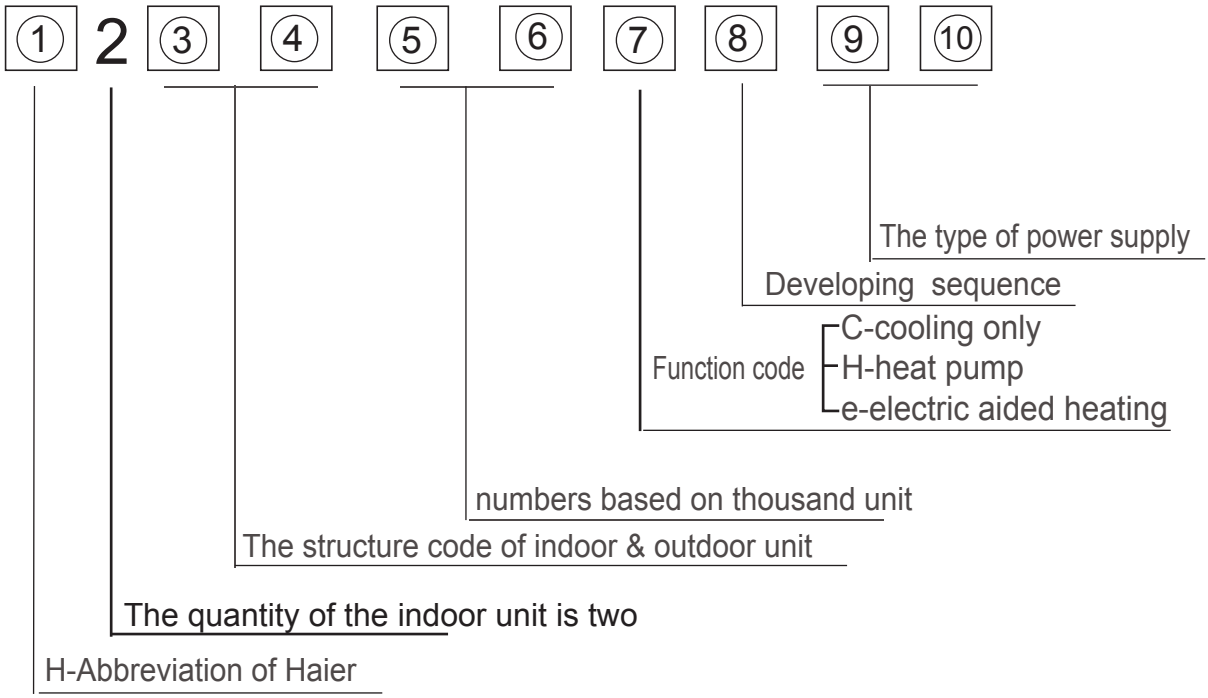
Serial Number: Versio n:00.00 Edition: 2005-3-25

Content

1. Description of product model coding and series introduction
2. Specifications
3. Curves of performance
4. Description,net dimensions and functions of main components and accessories
5. Brief introduction to electrical control functions
6. Abnormity diagnose
7. Wiring diagram
8. Circuit diagram
9. Trouble shooting
10. Refrigerating cycle diagram
11. Noise level test chart and air velocity distribution
12. Installationmanual

Description of product model coding and series introduction

A. Description of coding rules of unit model


① 2 ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩
The type of power supply
Developing sequence
Function code
C-cooling only
H-heat pump
e-electric aided heating
numbers based on thousand unit
The structure code of indoor & outdoor unit
The quantity of the indoor unit is two
H-Abbreviation of Haier

Examples:

H2SM-18HB03/R2,It represents wall-mounted multi-type split type room air conditioner.The cooling capacity is 18000BTU/h,and the power supply is 220-230V/50Hz,"B" means the improvement

B.Standard Situation/Conditions

No.	Operating condition	indoor air status		outdoor air status	
		DB°C	WB°C	DB°C	WB°C
1	Norminal cooling	27°C	19°C	35°C	24°C
2	Norminal heating	20°C	15°C	7°C	6°C
3	Norminal electrical heating	---	---	---	---

C.Series brief introduction

1.comfortable:wide-angle airflow
The vertical dual-flap and horizontal wide-angle louvers ensure the cool(warm air reaches every corner of the room.

2.Health air purifying and negative ion function
An air purifying filter with deodorizing and disinfecting functions keeps the air clean and users healthy.The negative ion generator can produce the negative ion that make the air fresher and cleaner.

3.Quiet operation
Fan With Random-pitched Blades.
Random-pitched blades help reduce operating noise while maintaining a high airflow rate.

2.Engergy efficient
The design of inner-grooved copper tube greatly increases the refrigerant contact area and the efficiency of cooling/heating functions.

5.Convenience
Auto restart and washable panel:
The grille can be removed easily and washed when necessary.Any series have the function then even if the power falls when the unit is operating unit will automatically return to the operating settings in use before the power failure when power is restored.

6.Wide variety of functions
24-Hour Timer:
24-hour timer allows users to select the exact time they would like the air conditioner to turn on and to turn off.Timers on previous models operation based on the number of hours of desired operation.

7.Night-set models
When the air conditioner is operationg on the timer-off circuit.The preset room temperature gradually rises(going down in heating)before the unit stops as shown delow.Users can sleep comfortably without sudden change in temperature.

8.Program”dry”
This function automatically reduces the level of humidity while maintaining the preset indoor temperature.

Specifications

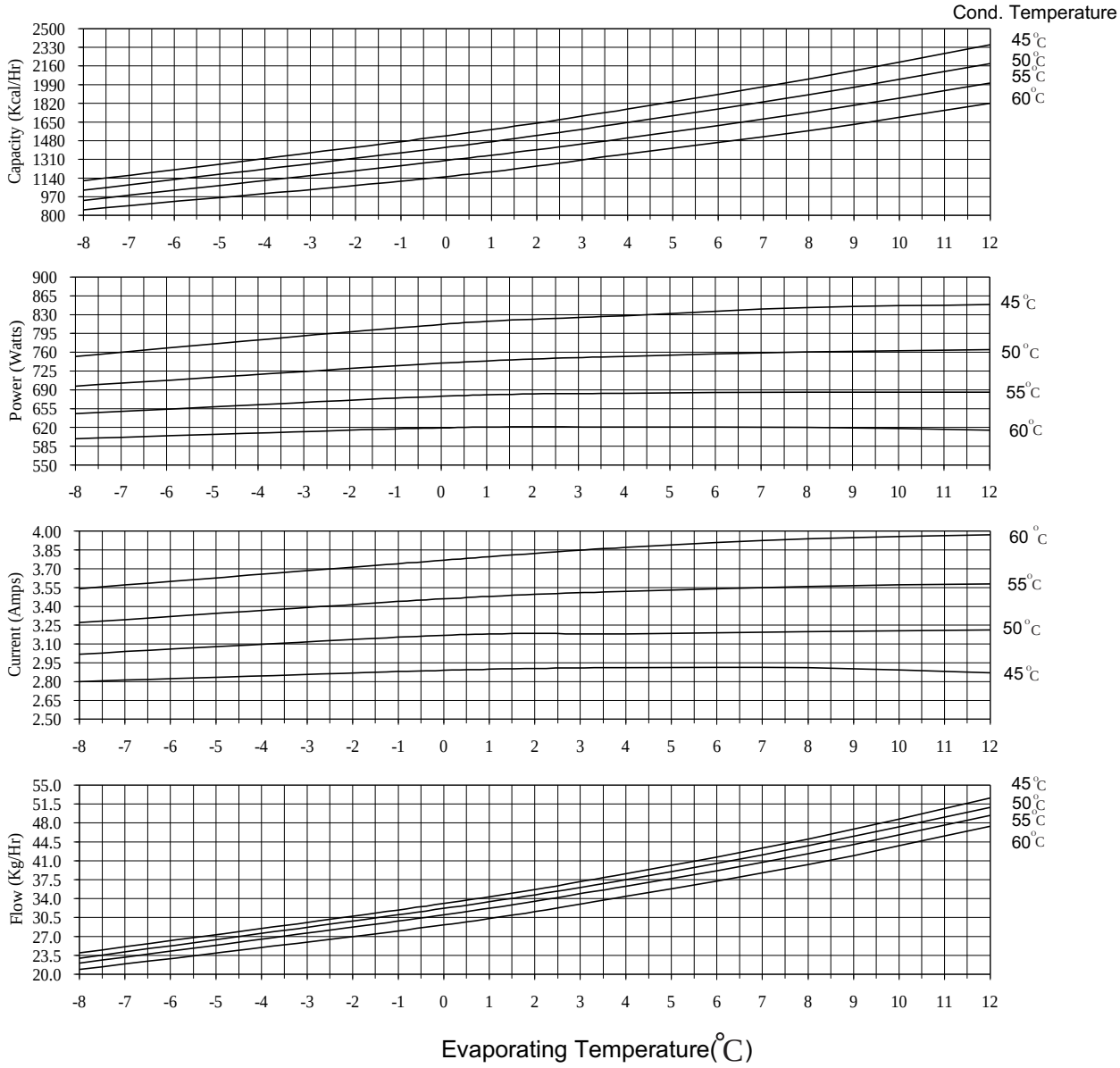
Model:	H2SM-14HC03/R2	Appearance color (indoor/outdoor):	White / White
Cooling capacity:	**2080/ 4160 W**	**Heating capacity:**	**2340/4500W**
Cooling coefficient:	2.81/2.81 (W/W)	Heating coefficient:	3.21/3.21(W/W)
Cooling power:	740 / 1480 W	Heating power:	730/1400
Moisture removal:	1.0 / 2.0 *10^{-3} m^3/h	Refrigerant type:	R410A
Operating voltage range:	220～230±10% V	Class of electric shock protection:	Class I
Operating temp. range:	-7～43℃	Climate type:	T1
Variation of temp. adjust:	± 1 ℃	Piling layers for indoor/outdoor units:	8/4
Indoor unit noise:	42/39/35 dB(A)	Noise of outdoor unit:	62/60/58 dB(A)
Net dimensions of indoor unit:	795×182×265 mm	Net dimensions of outdoor unit:	810×680×288 mm
Packaged dimensions of indoor unit:	865×272×330 mm	Packaged dimensions of outdoor unit:	960×760×406 mm
Indoor unit net/gross weights:	7.2 / 10.2 kg	Outdoor unit net/gross weights:	54 / 61kg
Max. mounting height difference:	5m	Current entering side (indoor/outdoor) :	Outdoor
Refrigerant charge:	720G(each compressor)x2	Max. refrigerant charge:	780G(each compressor)
Compressor model:	39A173AD&54K	Compressor manufacturer:	RICHI(TAIWAN)
Oil charge in compressor:	POE: 270ml	Length/diameter of drain hose:	2000*Φ15.6 mm
Size of stop valve:	1/4" 3/8"	Cap. tube type:	TP_2Y copper tube
Maxi. length of connecting pipe:	Single unit: 15m	Type/size of evaporator and condenser:	Internal treaded pipe Φ7/Φ9.52 mm
Fan speed:	1150 r/min indoor 840 r/min outdoor	Fan type/quantity:	Indoor: Cross flow fan Outdoor: Axial fan
Max. operating pressure at warm side:	4.15Mpa	Max. operating pressure at cool side:	4.15MPa
Frequency of filter cleaning:	Once/2 weeks	Air sending angle/distance:	60° / 7m
Case material:	Indoor unit: PS Outdoor unit: Iron		

Models:	H2SM-18HC03/R2	Appearance color (indoor/outdoor):	White / White
Cooling capacity:	2650/ 5300 W	Heating capacity:	2900/5600W
Cooling coefficient:	2.82 / 2.82(W/W)	Heating coefficient:	3.09/3.22(W/W)
Cooling power:	940 / 1880 W	Heating power:	940/1740
Moisture removal:	1.2 / 2.4 $*10^{-3}$ m^3/h	Refrigerant type:	R410a
Operating voltage range:	220～230±10% V	Class of electric shock protection:	Class I
Operating temp. range:	-7～43℃	Climate type:	T1
Variation of temp. adjust:	± 1 ℃	Piling layers for indoor/outdoor units:	8/4
Indoor unit noise:	42/39/35 dB(A)	Noise of outdoor unit:	62/60/58 dB(A)
Net dimensions of indoor unit:	795×182×265 mm	Net dimensions of outdoor unit:	810×680×288 mm
Packaged dimensions of indoor unit:	865×272×330 mm	Packaged dimensions of outdoor unit:	960×760×406 mm
Indoor unit net/gross weights:	7.6 / 10.6 kg	Outdoor unit net/gross weights:	59 / 66kg
Max. mounting height difference:	5m	Current entering side (indoor/outdoor) :	Outdoor
Refrigerant charge:	830G(each compressor)x2	Max. refrigerant charge:	850G(each compressor)
Compressor model:	44A233J-FEK	Compressor manufacturer:	RICHI(TAIWAN)
Oil charge in compressor:	POE: 270ml	Length/diameter of drain hose:	2000*Φ15.6 mm
Size of stop valve:	1/4" 3/8"	Cap. tube type:	TP_2Y copper tube
Maxi. length of connecting pipe:	Single unit: 15m	Type/size of evaporator and condenser:	Internal treaded pipe Φ7/Φ9.52 mm
Fan speed:	1150 r/min indoor 840 r/min outdoor	Fan type/quantity:	Indoor: Cross flow fan Outdoor: Axial fan
Max. operating pressure at warm side:	4.15Mpa	Max. operating pressure at cool side:	4.15MPa
Frequency of filter cleaning:	Once/2 weeks	Air sending angle/distance:	60° / 7m
Case material:	Indoor unit: PS Outdoor unit: Iron		

CURVES OF PERFORMANCE OF COMPRESSOR

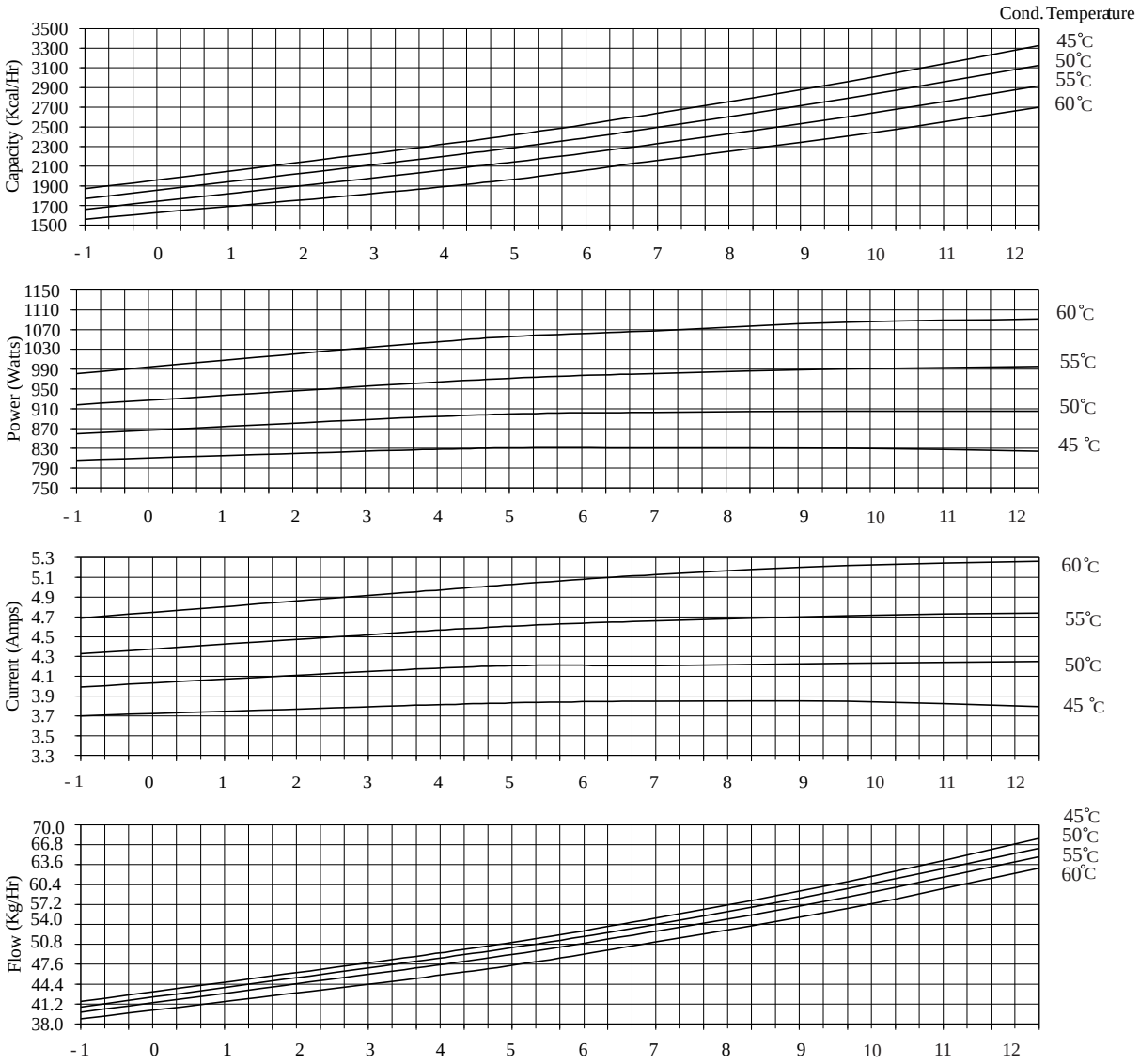
Performance Curve

Model	39A173A	Return Gas Temperature	35 ℃
Power Supply	220-230V / 50Hz / 1PH	Subcooling	8.3 ℃
Run Capacitor	25 μF / 370 VAC	Ambient Temperature	35 ℃



Performance Curve

Model	44A233A	Return Gas Temperature	35 ℃
Power Supply	220-230V / 50Hz / 1PH	Subcooling	8.3 ℃
Run Capacitor	40 uF / 370 VAC	Ambient Temperature	35 ℃

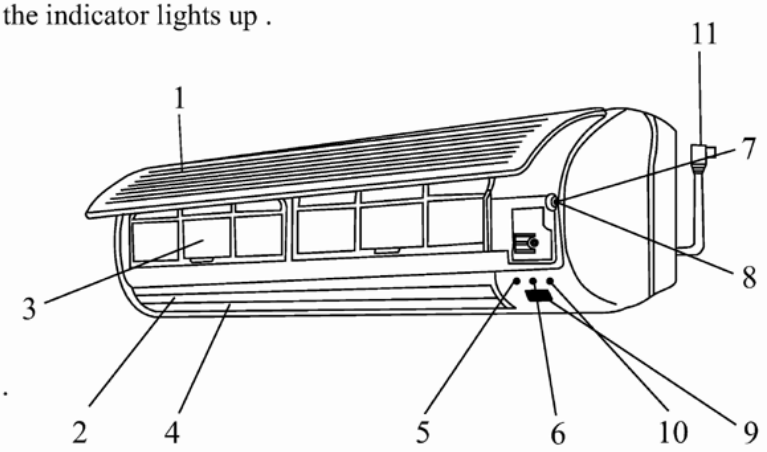


DESCRIPTION, DIMENSION & FUNCTION OF MAIN COMPONENTS AND ACCESSORIES

Description and function of main components and accessories

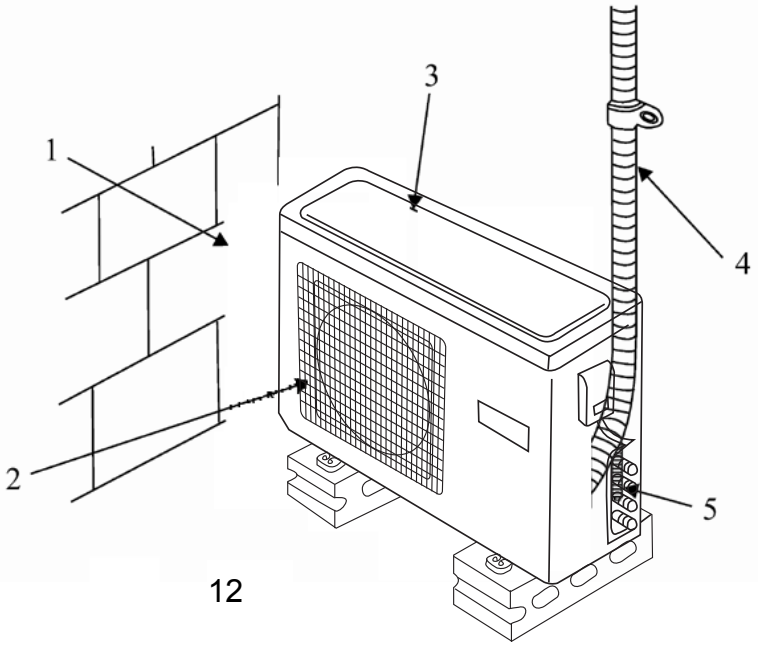
Indoor Unit:

1. Inlet Grill
2. Anion Generator (inside)
3. Air Filter
4. Swing louver
   It can be adjusted to upward or downward with the remote controller only (Do not adjust it manually)
5. Power or Healthy Operation Indicator
   After the air conditioner is started, this indicator lights up; when the healthy operation is started,this indicator turns green.
6. Timer Set Indicator
   When the air conditioner is at the state of time-set, this indicator lights up.
7. Test Manual Button
   This button is only used for test refrigerating operation when the room temperature is below 16℃, so it should not be used in normal situation.
8. Emergency Manual Button
   When the remote controller is lost or cannot be used, this button can make the air conditioner continue to operate for the time being.
9. Remote Signal Receiving Window
   It receives the remote signal from the remote controller.
10. Working Method Indicator
    When the compressor is working, the indicator lights up .
11. Power Plug

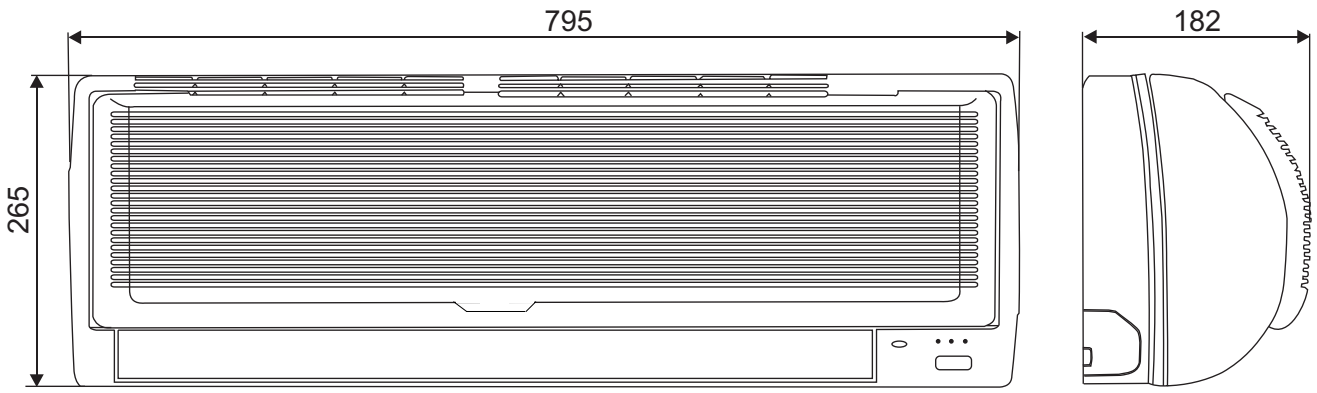


Outdoor Unit:

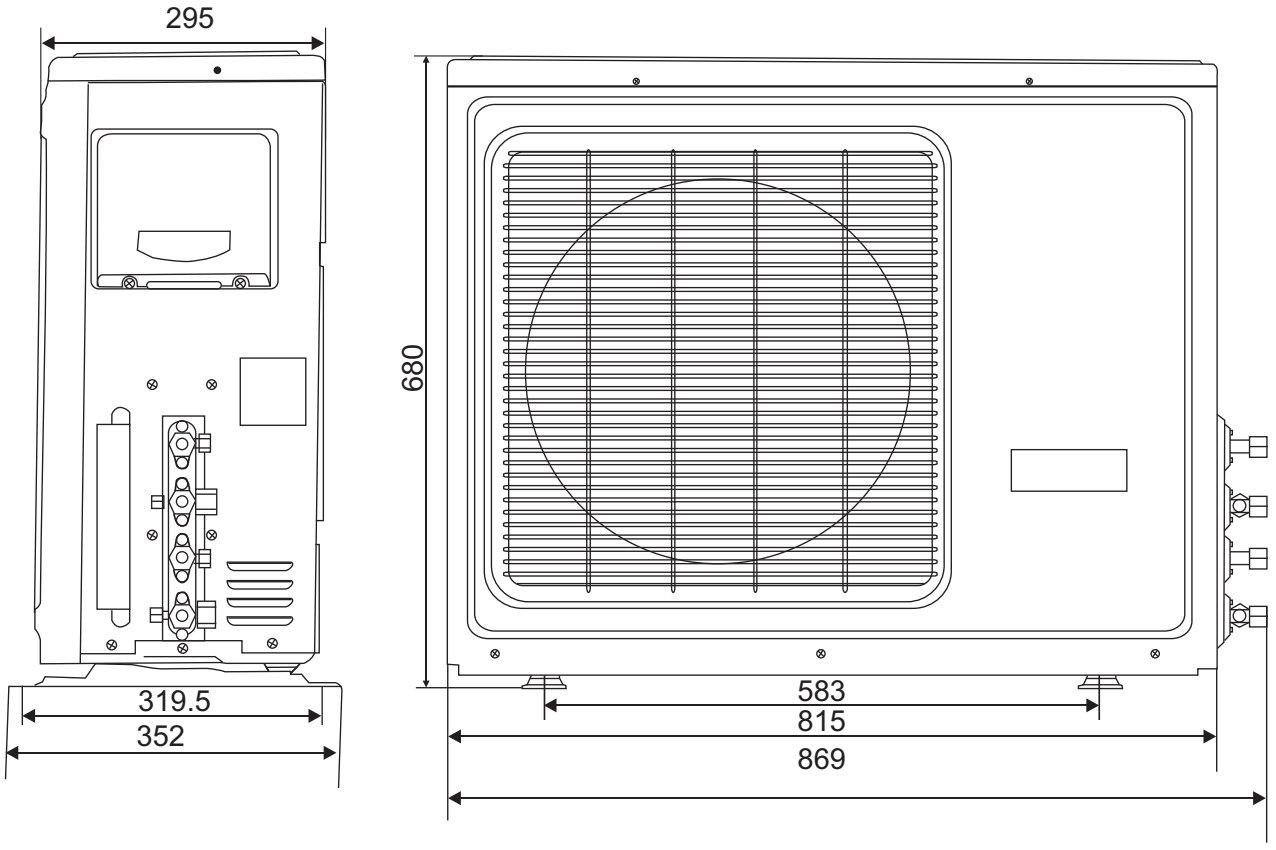
1. Inlet
2. Outlet
   Send out hot air when cooling,
   and send out cold air when heating .
3. Inlet
4. Connection pipe and electric wiring.
5. Drain Hose



Net dimensions for indoor unit



Net dimensions for outdoor unit



BRIEF INTRODUCTION TO ELECTRICAL CONTROL FUNCTION

one. Temperature Control Function

In temperature control function, the operation frequency of outdoor unit is determined based on room temperature and the set temperature.

In automatic fan speed mode, indoor fan is controlled based on the need of temperature control

In heating mode, indoor fan is controlled based on the temperature of coil.

1-1-1.Specification of Indoor Ambient Temperature Sensor

In case of short circuit or open circuit, indicator lamp alarms and indoor fan stops. When normal condition is resumed, fan will automatically restart and operate normally.

Short Circuit:

Temperature: over 126°C, Hexadecimal System: over F8H, Resistance: below 0.65K,Voltage: over 4.85V.

Normal Temperature:

Temperature: 25 °C, Hexadecimal System: 40H, Resistance: 23K, Voltage: 2.33V.

Open Circuit:

Temperature: below -31 °C, Hexadecimal System: below 08H, Resistance: below 620K Voltage: below 0.15V.

B Parameter = 4200 R (25 °C) = 23K

1-1-2 Specification of Indoor Coil Temperature Sensor

B Constant Number = 3700 R (25 °C) = 10KΩ

1-1-3 When heating operation starts and indoor fan stops or when within 30s of indoor fan starts after heating operation starts, the resistant of indoor ambient temperature sensor is ignored. (to avoid the impact of heat exchanger temperature over it.)

When forced operation ends after start-up, temperature zone control begins.

1-3. Set Temperature Correction

Set temperature is corrected according to unit model, operation mode, fan speed and whether it is in power operation.

Fan speed correction is available only during low and mid heating operation.

1-4. Temperature Zone Control

1-4-1.Error

Temperature zone error is calculated as per the following formula:

In Heating Mode: E = (Remote Control Set Temperature + Correction Value) – Indoor Temperature

In Cooling & Dehumidification Mode: E = Indoor Temperature - (Remote Control Set Temperature + Correction Value)

1-4-2 Compressor Shutdown

E is negative and |E|> ΔT

	Heating		Cooling	
ΔT	TCHAHL	0.67	TCHACL	0.33
After change of ΔT	TCHAHH	0.67	TCHACH	1
ΔT Change Condition	When operation starts E ≥ 3.0℃,			

Compressor shuts down after continuous testing for 120s,

At the beginning of operation, with reference to the conditions given in above table, it operates based on the parameters after change of ΔT until compressor shuts down for the first time. In the time period between compressor shutdown and restart, it operates based on ΔT. (except in dehumidification mode)

Compressor starts at the beginning of operation or upon switch of operation mode (except standby ends) or when E (error) > - ΔT.

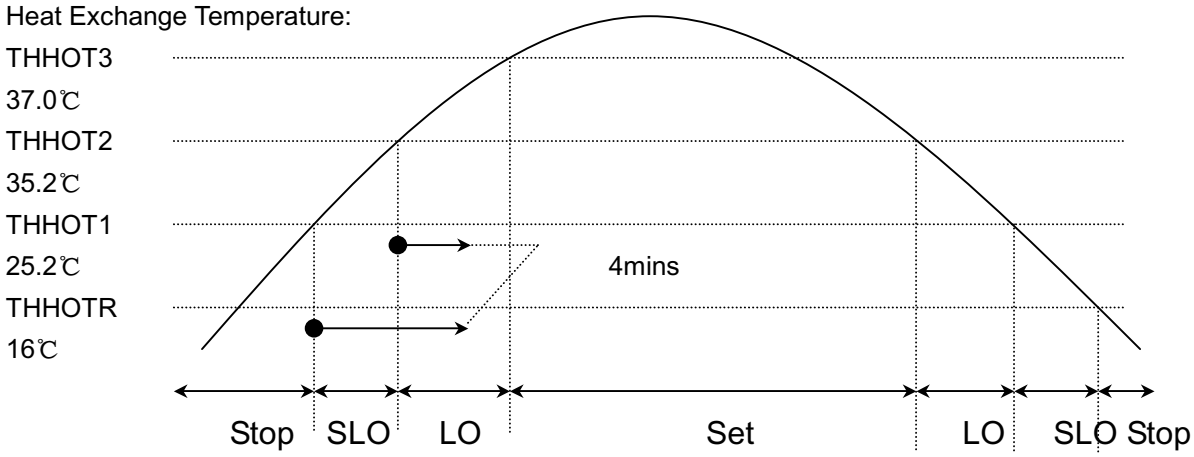
When compressor is operating, remote control set temperature is changing towards the direction of compressor shutdown and when it is below – ΔT, compressor will shut down.

2-4-3. Compressor Operation

Compressor restarts when E (error) > -△T+0.67℃ and when 3 mins standby is over.

two. Indoor Fan Control

2-1. Heating
2-1-1. Warm Start
Two. Cold Air Control in Heating Mode



Conduct indoor fan control as per the above diagram and the heat exchange temperature.

1. Judge wind speed when heat exchange temperature is rising:
   Fan is at super low level when heat exchange temperature is below 35.2℃.（Fan will stop upon initially energized into heating mode or after defrosting, or when heat exchange temperature is lower than 25.2℃. Fan is at super low level when temperature is higher than 25.2℃ but lower than 35.2 ℃.）;
   Fan is at low level when heat exchange temperature is between 35.2℃ and 37℃;
   Fan will operate as per setting when heat exchange temperature is above 37℃.
2. Judge wind speed when heat exchange temperature is falling:
   Fan is at low level when heat exchange temperature is below 35.2℃ but above 25.2℃;
   Fan is at super low level and will maintain the mode when heat exchange temperature is lower than 25.2℃（Fan is at super low level upon initially energized into heating mode or after defrosting, or heat exchange temperature is lower than 25.2℃ but higher than 16℃; Fan will stop when heat exchange temperature falls below 16℃.）
3. Wind speed is at super low or low level when heat exchange temperature is rising. If heat exchange temperature fails to enter the next temperature zone after 4 mins while wind speed rises to the next stage, it is necessary to maintain the set wind speed for 4 mins before it is adjusted based on heat exchange temperature.
4. When heat exchange temperature is falling, wind speed will return to set speed if low wind level is maintained for over 4 mins.

2-1-2. 3 mins standby period when compressor shutdown.
1. When compressor shuts down（temperature sensor is off）, airflow is low for the initial 20s then reduced to super low (When in silent operation, it is SSLO);
2. Wind is maintained at super low level in the standby period in heating mode（Compressor stops during mode switch.）.
3. Remote control shut down and stop indoor fan.
2-1-3. Compressor Restart
When warm start, airflow is at remote control set level.
When in automatic airflow mode, airflow is determined based on temperature.
Refers to temperature zone control functions.
2-2 Cooling
Airflow is different when airflow is set at high, mid and low level.
When in automatic airflow mode, airflow is determined as per temperature. Refers to temperature control functions.
2-3. Dehumidification
2-3-1. Compressor is off and is in 3 mins standby.

Fan will stop if compressor stops
Fan is at super low level upon the end of 3 mins standby.
Compressor is on after 3 mins standby.
2-3-2. Compressor is on.
When airflow is set at high, mid or low level, fan will operate as per the setting.
When in automatic airflow mode, airflow is determined as per temperature.

three. Timed Operation
Time counting will start based on the difference of timer clock and current clock.
In timed operation, display panel timer lamp is on.
3-0-1. Timer Off
When timer off is set, panel timer lamp is on and unit will stop operation as per the timing.
3-0-2. Timer On
If timer on is set, when unit is off, panel timer lamp will be on and unit will resume operation as per the timing and in set mode.
Execution sequence is based on the setting.

Four . Sleep Operation
When remote control set sleep mode, timer lamp is on.
4－1. In cooling/dehumidification mode, set temperature will rise 1°C after 1 hour operation and another 1°C after the second hour. The unit will stop after another 6 hours.
4－2. In heating mode, set temperature will fall 2°C after 1 hour and another 2°C after the second hour and will rise 1°C after another 3 hours and the unit will stop after another 3 hours.
4－3 If airflow of indoor fan is high before setting sleep mode, then it will turn into mid level after sleep mode is set. If airflow of indoor fan is mid before setting, it will turn into low level after setting. If airflow of indoor fan is low before setting, then it will not change after setting.

Five . Automatic Operation

4-1. Automatic Operation Mode:

On entering this mode, main control unit will decide the corresponding operation mode as per room temperature to maintain the set temperature（Set temperature is 23℃in heating mode and 26℃ in cooling mode.）.

Upon initial startup, the unit will enter heating mode if room inlet air temperature is equal to or lower than 23℃ or it will enter cooling mode if temperature is higher than 23℃.

When entering heating mode, the unit will operate as per heating program（set temperature is 23℃）Upon reaching temperature where compressor stops operation, compressor will stop and standby for 3 mins. In case it detects that inlet air temperature is higher than 27℃ 15 mins after compressor stops, the unit will enter cooling mode. Otherwise, the unit will remain in heating mode.

When entering cooling mode, the unit will operate as per cooling program（set temperature is 26℃）. Temperature difference compensation is automatically cancelled. Upon reaching temperature where compressor stops operation, compressor will stop and standby for 3 mins. In case it detects that inlet air temperature is equal to or lower than 23℃ 15 mins after compressor stops, the unit will enter heating mode. Otherwise, the unit will remain in cooling mode.

If the unit changes into automatic mode from any other mode and if the operation mode is changed (detect before operation), the unit will stop for 3 mins and it will operate based on inlet air temperature after 3 mins.

Six . Trial Operation
Trial operation will end after 30 mins, after which unit shuts down. In trial operation, the unit will quit trial operation mode upon reception of signal.

Compressor Stop Protection:

Eight . EEPROM Control

When outdoor unit is supplied with power, if there is any inconsistency between EEPROM parameter and checksum, EEPROM error.

When indoor unit receives EEPROM error signal from outdoor unit, it will display outdoor unit EEPROM error. At this time, control and emergency operation are not acceptable.

It can only be cancelled through power off.

Nine . Error Detect Method

9-1. Indoor Temperature Sensor Error

In operation, an error occurs if the temperature is above 126 ^{o}C or below – 31^{o}C.

Operation will resume automatically when temperature is outside the above range.

9-2. Heat Exchange Temperature Sensor Error

In operation, an error occurs if the temperature is above 196 ^{o}C or below – 53^{o}C.

Operation will resume automatically when temperature is outside the above range.

In error condition, low load protection is cancelled.

9-4. Transmission Error

Based on the condition of communication between indoor and outdoor unit, in case outdoor unit fails to receive signal within 20s after indoor unit sends out signal, transmission is abnormal. (except in the period of first 2 mins when power is supplied.). It is confirmed as transmission error when outdoor unit receive the error signal.

Transmission error is removed by stopping operation.

Ten . Special Function

10-1. Power-Off Compensation

a Entry Condition: Press sleep key 10 times in 7s and buzzer gives out 4 sounds and save the current status into indoor unit EEPROM upon the entry.

b. On entering power-off compensation operation, indoor unit operates as per the following procedures:

Remote control emergency signal, and operates as per condition set by remote control and emergency setting and save the current status into indoor unit EEPROM.

Main unit will operate as per condition set on panel board. And save the current status into indoor unit EEPROM.

c. Exit Condition: Press sleep key 10 times in 7s and buzzer gives out 2 sounds

d. If timer and sleep features are set under power-off compensation condition, main unit memory is in a state of shut-off if power is off and on again.

Eleven . Error Presentation Mode

11.1 Three Indicator Error Code

Error Conditions	Error Display PS Operation	Timer Operation	Operation Heating Cooling	Indoor	Outdoor	Automatic Reset	Cause
Indoor Senistor Error	★	■	■	*		*	1. Connector loose contact or ambient temperature sensor error.
Indoor Heat Exchange Senistor Error	★	□	□	*		*	1. Connector loose contact or coil sensor error.
Outdoor Senistor Error	□	★	■		*	*	1. Connector loose contact or sensor error
Transmission Error	■	■	★	*			1. There is large interference source around or wiring error.
					*		2. Wiring error or control panel error.
EEPROM Error	★	□	★	*			1. Whether control panel is damaged.
					*		1. Whether control panel is damaged.
Indoor Fan Error	■	□	★	*			
Note	□On★Blink■Off			* This function is available.			

Twelve . Emergency Switch

When shutdown, press emergency switch down for less than 5s, the unit will start emergency operation.
When shutdown, press emergency switch down for more than 5s but less than 10s, the unit will start trial operation.
When shutdown, press emergency switch down for more than 10s but less than 15s, it will demonstrate the previous error.
When shutdown, press emergency switch down, the panel will display automatic operation.
When shutdown, press emergency switch down for less than 15s, or remove hand from emergency switch, the unit will not accept remote control signal.
Unit enters shutdown condition after 15s.
Unit can receive remote control signal after 15s.
Press emergency switch during operation, air-conditioner will shut down.,
During operation, if error occurs, press emergency switch to shut down the unit to clear error condition.
During error presentation, press emergency switch and error presentation will end.
During operation, if emergency switch is pressed continuously (press and hold) in normal or abnormal condition (such as tact switch short circuit) or in error presentation condition, the unit can also receive remote control signal.
Error Record Presentation Mode:
When press and hold switch for 10s it gives out 3 sounds, release switch to enter error record presentation mode. Press and hold switch for 15s, panel display is off and error record presentation mode is cancelled.
Previous alarm information will be sent to display panel for status display.
Error record presentation mode is cleared after 10s. (Error record presentation mode is only displayed for 10s.)
During the presentation, no remote control signal except shutdown signal is accepted.
There is no presentation when no error occurs, only buzzer utters sound.

Outdoor PCB Function Manual

1. Single-unit cooling operation

1.1When the single unit's indoor unit gives a cooling signal, the corresponding outdoor compressor carries out cooling operation. During the operation, the outdoor fan operates 1 second before the compressor operates.

1.2When changed from heating to cooling, the compressor stands by for 3 minutes, the outdoor fan operates to blow off remaining heat and stops 30 seconds later.

1.3When the outdoor ambient temperature T1≥38℃, the outdoor fan runs at the high speed. There is a return difference of 2℃ for the change between high and medium speed.

When the outdoor ambient temperature T1≤26℃, the outdoor fan runs at the low speed. There is a return difference of 2℃ for the change between low and medium speed.

When the outdoor ambient temperature T1≤8℃, the outdoor fan is in a cycle of 1 minute stop and 3 minute run. There is a return difference of 2℃ for the change between low speed and run and stop.

1.4Once the fan operates in a mode, it must operate for more than 45 seconds.

There is a temperature cut-off protection: when the indoor coil temperature higher than T_CPS (68℃) and maintains for 10 seconds, both the compressor and outdoor fan stop. The compressor will not restart in 3 minutes until the coil temperature lower than T_CP R(50℃). The indoor fan is controlled the same as the thermostat is OFF.

2. Double-unit cooling operation

2.1When the indoor unit gives out a double unit cooling signal, outdoor compressor A starts cooling operation. During the operation, the outdoor fan runs 1 second before compressor A operates, 20 seconds later, outdoor compressor B starts cooling operation.

2.2Once a compressor starts, the other compressor will not start in 20 seconds from the start.

2.3 When changed from heating to cooling, the compressor stands by for 3 minutes. When both compressors are in the strand-by status, the outdoor fan stops. Otherwise, it operates. The status of the fan depends on the number of the compressors that operate.

2.4 When the outdoor ambient temperature T1≥30℃, the outdoor fan runs at the high speed. There is a return difference for the change between high and medium speed;

When the outdoor ambient temperature T1≤23℃, the outdoor fan runs at the low speed. There is a return difference for the change between low and medium speed;

When the outdoor ambient temperature T1≤5℃, the outdoor fan is in a cycle of 1 minute stop and 3 minute run. There is a return difference of 2℃ for the change between low speed and run and stop.

2.5Once the fan operates in a mode, it must operate for more than 45 seconds.

2.6 There is a temperature cut-off protection: when a indoor coil temperature higher than T_CPS (68℃) and maintains for 10 seconds, the corresponding compressor stops. The compressor will not restart in 3 minutes until the coil temperature lower than T_CP R(50℃). The indoor fan is controlled the same as the thermostat is OFF.

2.7 In the case of double-unit cooling, one compressor stops and it changes to the single-unit operation. The fan is controlled in the single-unit operation mode. It stops 30 after blowing off the remaining heat only if both compressors turn off at the same time.

3.Single unit heating operation:

3.1 When the single unit's indoor unit gives a heating signal, the corresponding outdoor compressor carries out cooling operation. During the operation, the outdoor fan and 4-way valve operate 1 second before the outdoor fan operates.

3.2. When changed from cooling to heating, the compressor stands by for 3 minutes, the outdoor fan stops.

3.3 When the outdoor ambient temperature T1≤3℃, the outdoor fan runs at the high speed. There is a return difference of 2℃ for the change between high and medium speed.

When the outdoor ambient temperature T1≥13℃, the outdoor fan runs at the low speed. There is a return difference of 2℃ for the change between low and medium speed.

3.4. Once the fan operates in a mode, it must operate for more than 45 seconds.

3.5. There is a high temperature protection and a temperature cut-off protection.

High temperature protection: When the indoor coil temperature higher than T_OFS (56℃), the outdoor fan stops; when the coil temperature falls to T_OFR (52℃), the outdoor fan restarts. The outdoor fan stops for more than 45 seconds.

High temperature cut-off protection: When the indoor coil temperature higher than T_CPS (68℃) and maintains for 10 seconds, both the compressor and outdoor fan stop, and the indoor fan operates as the thermostat is Off. The compressor will not restart in 3 minutes until the coil temperature lower than T_CP R(50℃).

4. Double-unit heating operation

4.1 When the double-unit's indoor unit gives out a heating signal, outdoor compressor A starts heating operation. During the operation, outdoor compressor A and the 4-way valve operate 1 second before the fan starts, 20 seconds later, outdoor compressor B starts heating operation.

4.2Once an outdoor compressor starts, the other compressor will not start in 20 seconds from the start.

4.3 When changed from cooling to heating, the compressor stands by for 3 minutes. When both compressors are in the strand-by status, the outdoor fan stops. Otherwise, it operates. The status of the fan depends on the number of the compressors that operate.

4.4 When the outdoor ambient temperature T1≤10℃, the outdoor fan runs at the high speed. There is a return difference for the change between high and medium speed;

When the outdoor ambient temperature T1≥20℃, the outdoor fan runs at the low speed. There is a return difference for the change between low and medium speed.

4.5Once a fan operates in a mode, it must operate for more than 45 seconds.

5. Cooling and heating operations take place at the same time:

5.1 When one of the indoor units gives out a cooling signal and another unit gives out a heating signal at the same time, the outdoor fan operates at the low speed.

5.2 When the indoor unit gives the value of coil temperature, the outdoor fan runs at the low speed if the heating outdoor unit judges high load.

5.3When outdoor ambient temperature T1≥28℃, there is no heating operation.

5.4When outdoor ambient temperature T1≤7℃, there is no cooling operation.

5.5Once a compressor starts, the other compressor will not start in 20 seconds from the start.

6.Single-unit heating operation with heat load:

6.1 In the single-unit heating operation, the indoor unit gives out the value of the coil temperature, and the outdoor unit judges whether to start in the high load protection operation

based on the value of the coil temperature it has received. If the conditions for high load protection are met, the outdoor fan stops immediately. It will restart 45 seconds later if the signal for the outdoor heat load disappears. Otherwise, the outdoor fan will continue to stop until the signal for the outdoor heat load disappears. The signal for heat load is as follows:

High temperature protection: When the indoor coil temperature higher than T_OFS (56℃), the outdoor fan stops; when the coil temperature falls to T_OFR (52℃), the outdoor fan restarts. The outdoor fan stops for more than 45 seconds.

High temperature cut-off protection: When the coil temperature higher than T_CPS (68℃) and maintains for 10 seconds, both the compressor and outdoor fan stop, and the indoor fan operates as the thermostat is Off. The compressor will not restart in 3 minutes until the coil temperature lower than T_CP R(50℃).

6.2 In the single-unit heating operation, the current in the compressor is larger than 4.0 A(for Model 14)(4.8A for Model 18), and the outdoor fan stops. 45 seconds later, the current in the compressor is less than 3.5A(for Model 14)(4.3A for Model 18), and the outdoor fan operates in normal condition(the compressor does not detect current within 30 seconds after its start), the current in the compressor is larger than 3.5A(for Model 14)(4.3A for Model 18) and less than 4.0A(for Model 14)(4.8A for Model 18), and the outdoor fan does not restore.

7.Double-unit heating operation with heat load

7.1 In the double-unit heating operation, the indoor unit gives out the value of the coil temperature, and the outdoor unit judges whether to start in the high load protection operation based on the value of the temperature it has received. If the conditions for high load protection are met, the outdoor fan stops immediately. It will restart 45 seconds later if the signal for the outdoor heat load disappears. Otherwise, the outdoor fan will continue to stop until the signal for the outdoor heat load disappears. The signal for heat load is as follows:

High temperature protection: When the indoor coil temperature higher than T_OFS (56℃), the outdoor fan stops; when the coil temperature falls to T_OFR (52℃), the outdoor fan restarts. The outdoor fan stops for more than 45 seconds.

High temperature cut-off protection: When the coil temperature higher than T_CPS (68℃) and maintains for 10 seconds, both the compressor and outdoor fan stop, and the indoor fan operates as the thermostat is Off. The compressor will not restart in 3 minutes until the

coil temperature lower than T_CP R(50℃).

7.2 When the outdoor single-unit gives out the heat load signal, the outdoor fan stops immediately, 45 minutes later, the heat load signal disappears, and the outdoor fan operates.

7.3 In heating operation, any of the current in the compressor is larger than or equal to 4.0 A (for Model 14, 4.8A for Model 18), and the outdoor fan stops. The current in the compressor is less than or equal to 3.5A (for Model 14, 4.3A for Model 18), and the outdoor fan restores (the compressor does not detect current within 30 seconds after its start), the current in the compressor is larger than 3.5A (for Model 14, 4.3A for Model 18) and less than 4.0A(for Model 14, 4.8A for Model 18), and the outdoor fan does not restore.

8. Current peak protection

8.1. The current in the compressor is larger than 6.8A(for Model 14, 8.2A for Model 18) for more than 5 seconds, The compressor which has the highest current will stop(the compressor does not detect current within 10 seconds after its start) and 3 minutes later it will continue to operate.

8.2. The compressor will no longer operate if overcurrent protection occurs 4 times in a row within 30 minutes, and the output transformer signal fails. In the double-unit operation, if one of the compressors stops due to the current too high, the other system is a single system.

9. Single-unit defrosting operation (outdoor judgement)

Defrosting control

9.1. Conditions for starting in the defrosting operation

The heating compressor starts and operate continuously for 10 minutes. After the compressor has been operating for 45 minutes in total, detecting the defrosting sensor TE (detecting the frosting of the outdoor heat exchanger) and the outdoor ambient temperature sensor TA for straight 2 minutes, provided the following conditions are met, it will start for the defrosting operation: $TE \leqslant C \times TA - \alpha$

Where,

C: $TA < 0℃$

C=0.8

TA≥0℃

C=0.6

α=6

In the place where it tends to frost, it is preferred to choose H. In the place where it does not intend to frost, it is preferred to choose L. It is set M at delivery.

During the defrosting operation, the temperature control starts -15℃≤C×TA－α≤-2℃

9.2. Interval of defrosting

When the result of the calculation from C×TA－α falls in the range of -15℃≤C×TA－α, the interval between two defrosting operations is 45 minutes.

When the result of the calculation from C×TA－α falls in the range of C×TA－α<-15℃, the interval between two defrosting operations is 55 minutes.

9.3. Defrosting operation

At the beginning of defrosting, the compressor is halted for the first one minute, but the outdoor fan operates, 50 seconds later, the 4-way valve is OFF.

9.4. Once starting to defrost, the compressor must be guaranteed at least 2 minutes of operation before canceling defrosting. As for the conditions to cancel defrosting, it will restore to the heating operation from the defrosting operation as long as any of the following conditions is met.

(1) . The outdoor heat exchanger temperature is above 7 degrees for consecutive 80 seconds.

(2) . The outdoor heat exchanger temperature is above 5 degrees for consecutive 12 seconds.

(3) . The defrosting operation has lasted 9 minutes.

9.5 After the conditions for cancellation of defrosting are met, the following operations will follow:

The compressor stops, the outdoor fan starts, 50 seconds later, the 4-way valve is engaged, and 60 seconds later, the compressor operates.

10. Double-unit defrosting operation

After receiving the signal to stop the indoor unit during the defrosting period, the unit must not

be turned off until the outdoor defrosting lasts more than 2 minutes.

When the double units are activated for defrosting, the activation of compressor B is 20 minutes later than that of compressor A.

Conditions for ending defrosting: It will restore to the heating operation from the defrosting operation as long as any of the following conditions is met.

(1) . The temperatures on both outdoor heat exchangers are above 7 degrees for consecutive 80 seconds.

(2) . The temperatures on both outdoor heat exchangers are above 5 degrees for consecutive 12 seconds.

(3) . The defrosting operation has lasted 9 minutes.

The starting conditions and control process for the double-unit are same as that for single-unit defrosting, the only difference is that the activation of compressor B lags that of compressor A.

11. Alarming operation

1. When the whole unit is in normal operation, the alarm light is always on, but does not flash.
2. When the outdoor temperature sensor short-circuited or disconnected, the outdoor fan always operates at the medium speed and will restore automatically after the sensor comes to normal.
3. When the temperature sensor short-circuited or disconnected or the current transformer fails, the alarm light flashes in the following manner; when the current transformer fails, the signal is sent to the indoor unit that operates abnormally, and the corresponding indoor unit indicates trouble:

Additional codes for overcurrent

LED light flashes once	outdoor Eeprom in trouble
LED light flashes twice	outdoor ambient temperature sensor in trouble
LED light flashes 3 times	communication with indoor unit A in trouble
LED light flashes 5 times	outdoor unit A's coil in trouble
LED light flashes 6 times	outdoor unit A's CT current too high
LED light flashes 7 times	communication with indoor unit B in trouble
LED light flashes 9 times	outdoor unit B's coil in trouble
LED light flashes 10 times	outdoor unit B's CT current too high

ABNORMITY DIAGNOSE

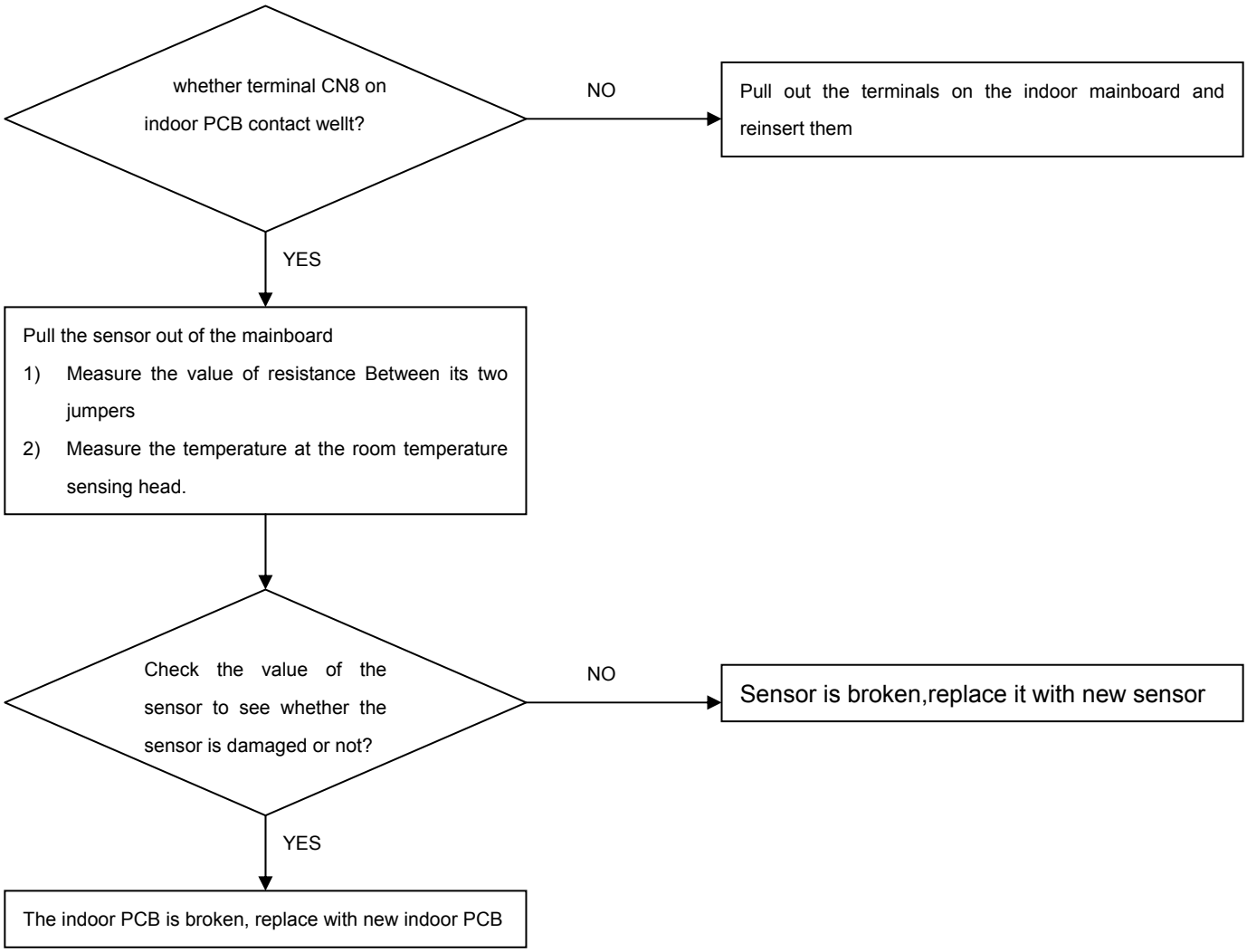
Codes and Description

	Code indication	Description	Outdoor led1 blinks times
	indoor		
	Power timer operate Operate heating cooling		
Indoor Malfunction	★ ■ ■	Room temperature sensor failure	--
	★ □ □	Heat-exchange sensor failure	--
	★ □ ★	Indoor EEPROM error	---
	■ □ ★	Indoor fan motor malfunction	--
	■ ■ ★	Communication Error (between indoor and outdoor unit)	3 or 7
Outdoor Malfunction		outdoor EEPROM error	1
	★ □ ■	Outdoor Senistor Error	2
		outdoor unit A's coil sensor failure	5
		outdoor unit B's coil sensor failure	9
explanation	□on★flash■off		

Trouble Shooting

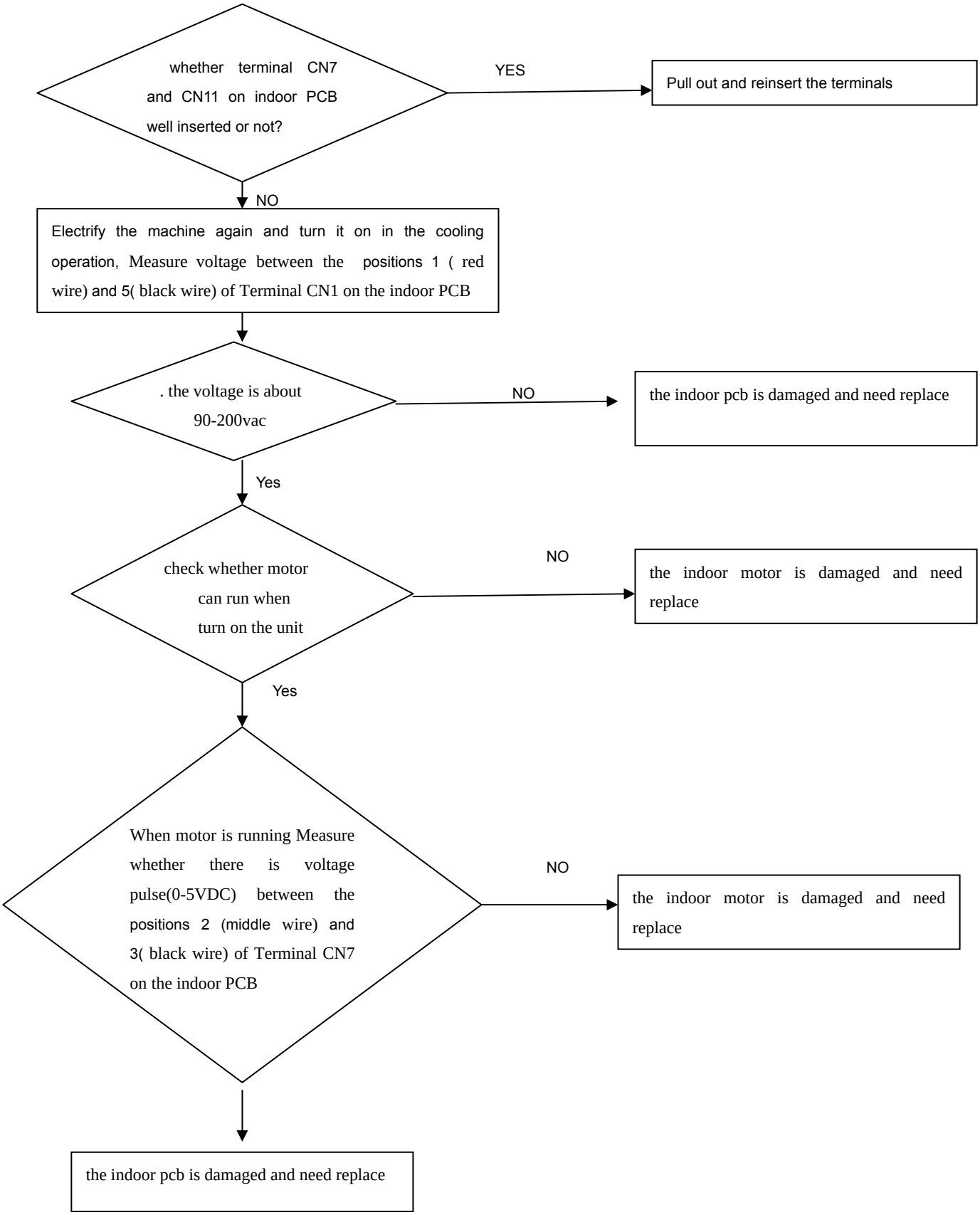
★ ■ ■: Room temperature sensor failure CN8

★ □ □: Heat-exchange sensor failure CN8


whether terminal CN8 on indoor PCB contact wellt?
NO
Pull out the terminals on the indoor mainboard and reinsert them
YES
Pull the sensor out of the mainboard
1) Measure the value of resistance Between its two jumpers
2) Measure the temperature at the room temperature sensing head.
Check the value of the sensor to see whether the sensor is damaged or not?
NO
Sensor is broken,replace it with new sensor
YES
The indoor PCB is broken, replace with new indoor PCB

★ □ ★: Indoor EEPROM error: Replace the PCB of indoor unit

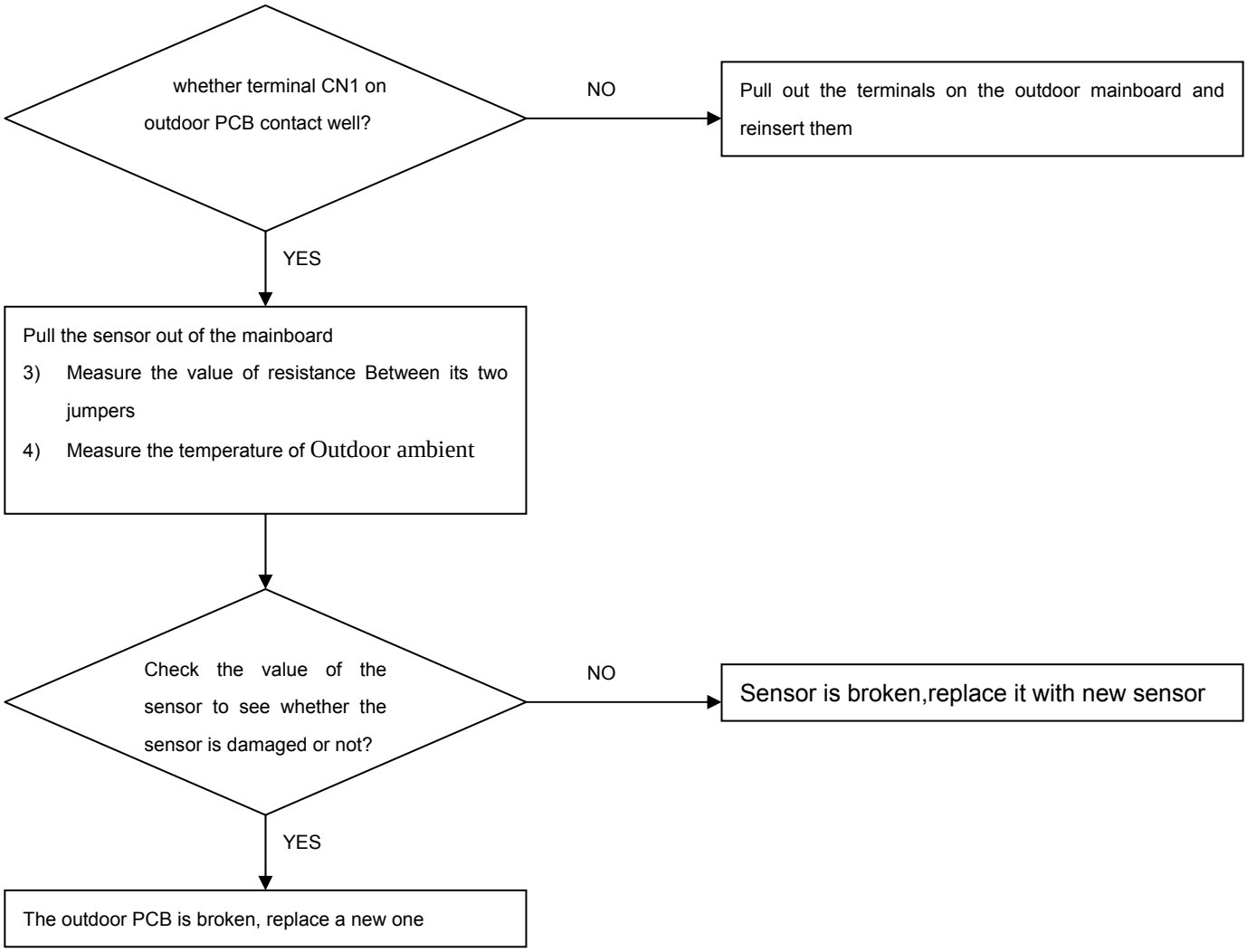
■ □ ★:Indoor fan motor malfunction


whether terminal CN7 and CN11 on indoor PCB well inserted or not?
YES
Pull out and reinsert the terminals
NO
Electrify the machine again and turn it on in the cooling operation, Measure voltage between the positions 1 (red wire) and 5(black wire) of Terminal CN1 on the indoor PCB
. the voltage is about 90-200vac
NO
the indoor pcb is damaged and need replace
Yes
check whether motor can run when turn on the unit
NO
the indoor motor is damaged and need replace
Yes
When motor is running Measure whether there is voltage pulse(0-5VDC) between the positions 2 (middle wire) and 3(black wire) of Terminal CN7 on the indoor PCB
NO
the indoor motor is damaged and need replace
the indoor pcb is damaged and need replace

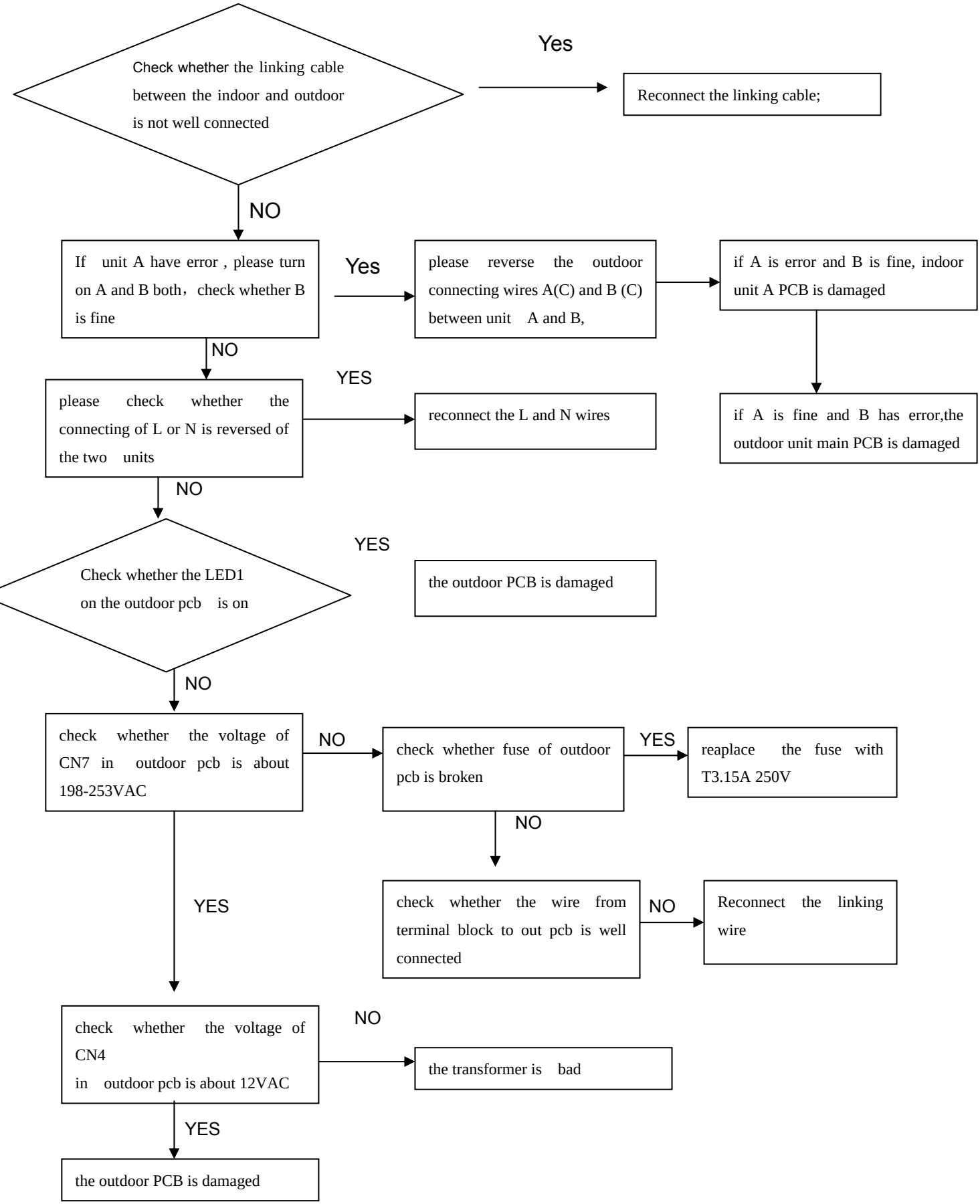
LED1 of outdoor pcb flashes once: outdoor EEPROM error: Replace the PCB of outdoor unit,

★ □ ■

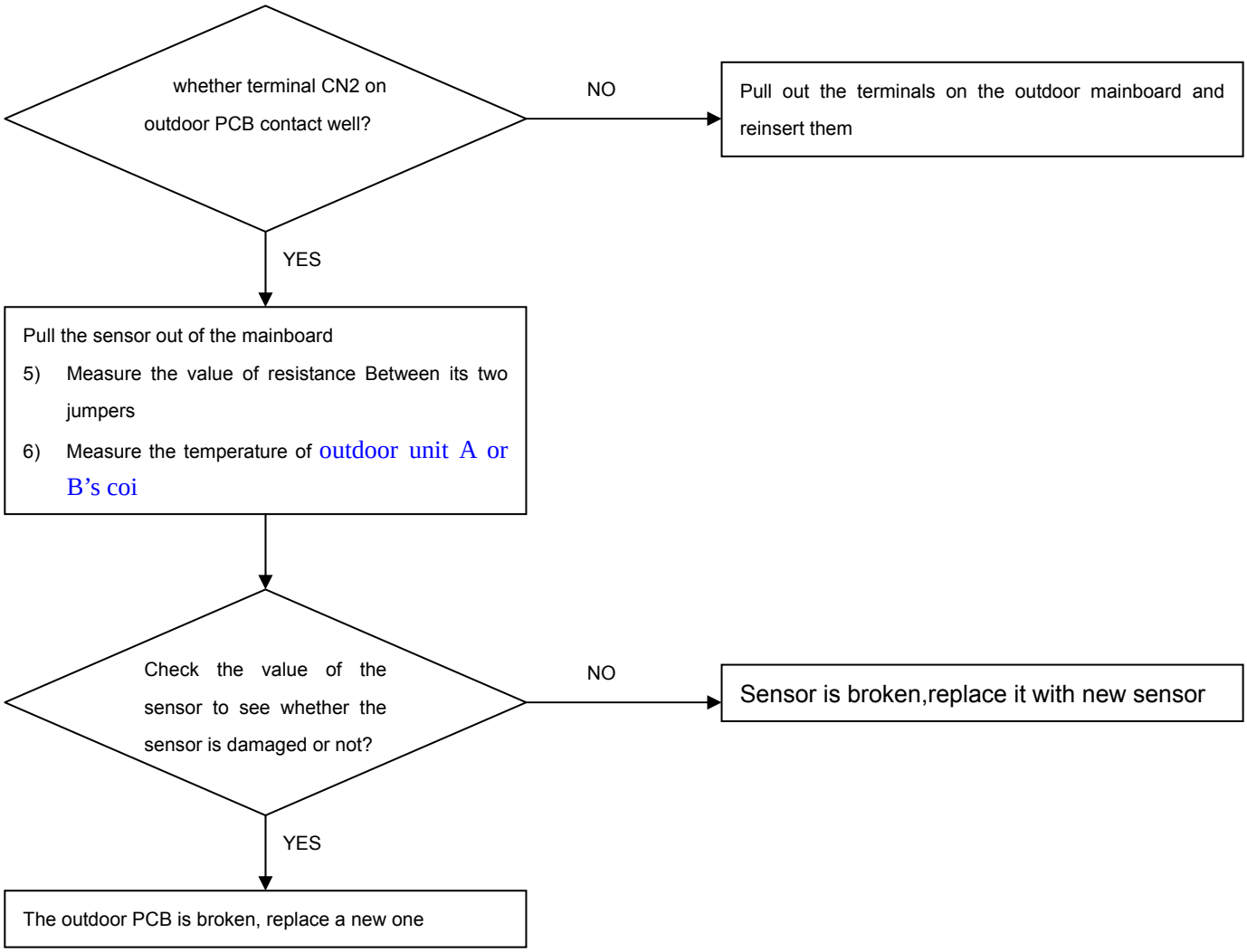
LED1of outdoor pcb flashes twice: Outdoor ambient Sensor failure CN1,


whether terminal CN1 on outdoor PCB contact well?
NO
Pull out the terminals on the outdoor mainboard and reinsert them
YES
Pull the sensor out of the mainboard
3) Measure the value of resistance Between its two jumpers
4) Measure the temperature of Outdoor ambient
Check the value of the sensor to see whether the sensor is damaged or not?
NO
Sensor is broken,replace it with new sensor
YES
The outdoor PCB is broken, replace a new one

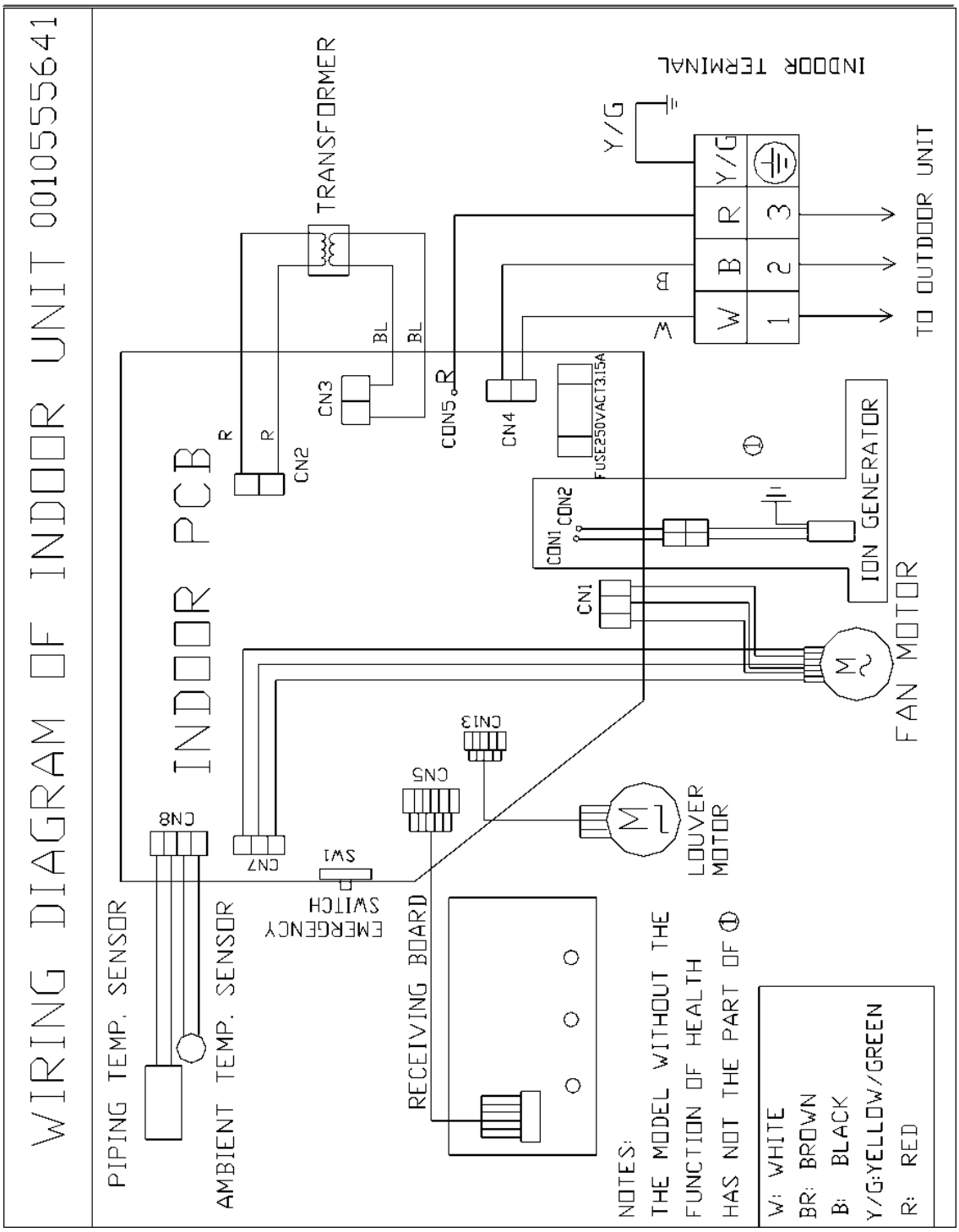
■ ■ ★ **:Communication fault between indoor and outdoor system**

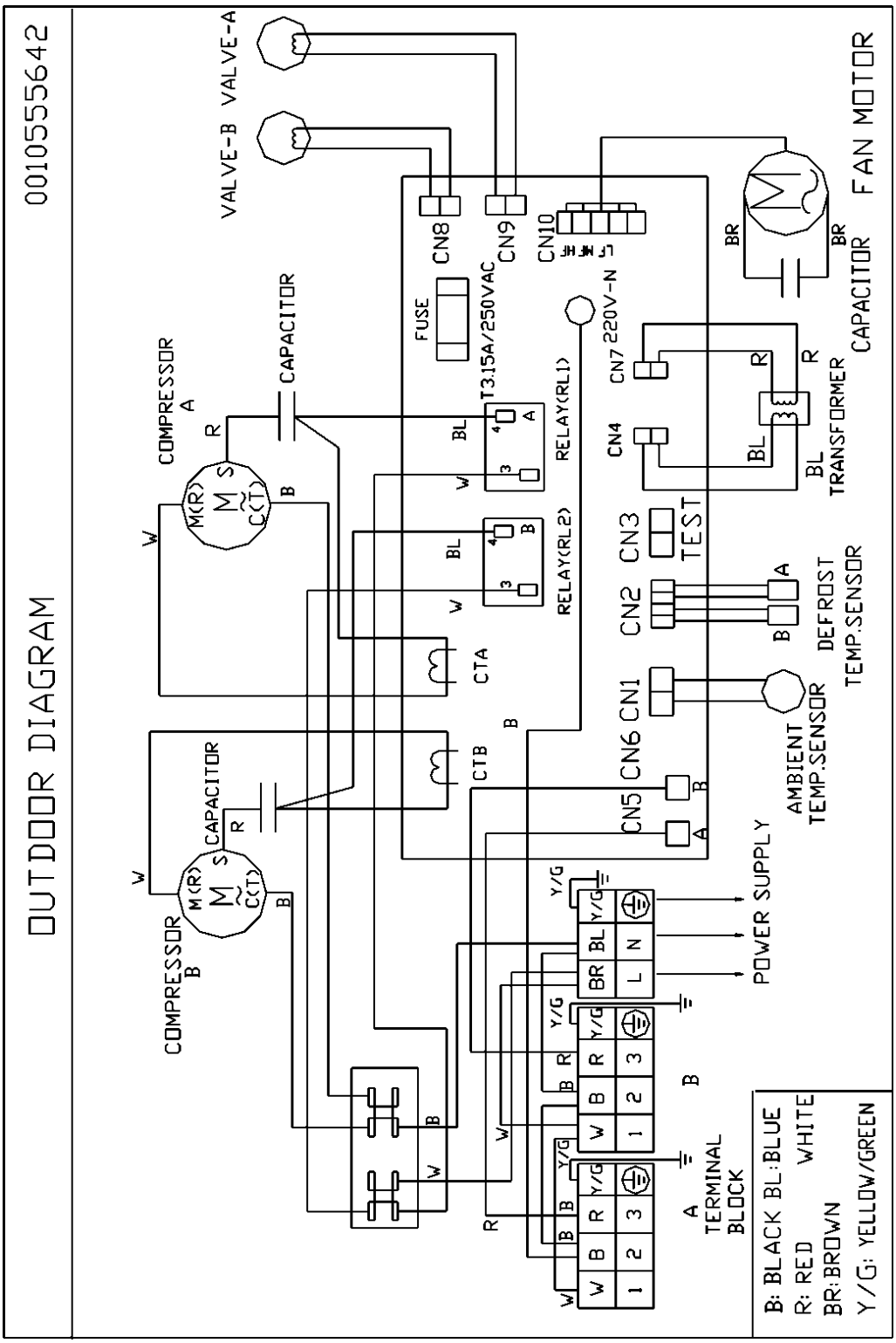

Check whether the linking cable between the indoor and outdoor is not well connected
Yes
Reconnect the linking cable;
NO
If unit A have error , please turn on A and B both，check whether B is fine
Yes
please reverse the outdoor connecting wires A(C) and B (C) between unit A and B,
if A is error and B is fine, indoor unit A PCB is damaged
NO
please check whether the connecting of L or N is reversed of the two units
YES
reconnect the L and N wires
if A is fine and B has error,the outdoor unit main PCB is damaged
NO
Check whether the LED1 on the outdoor pcb is on
YES
the outdoor PCB is damaged
NO
check whether the voltage of CN7 in outdoor pcb is about 198-253VAC
NO
check whether fuse of outdoor pcb is broken
YES
reaplace the fuse with T3.15A 250V
NO
YES
check whether the wire from terminal block to out pcb is well connected
NO
Reconnect the linking wire
check whether the voltage of CN4 in outdoor pcb is about 12VAC
NO
the transformer is bad
YES
the outdoor PCB is damaged

LED1 of outdoor pcb flashes 5 or 9 times outdoor unit A or B's coi sensor failure CN2

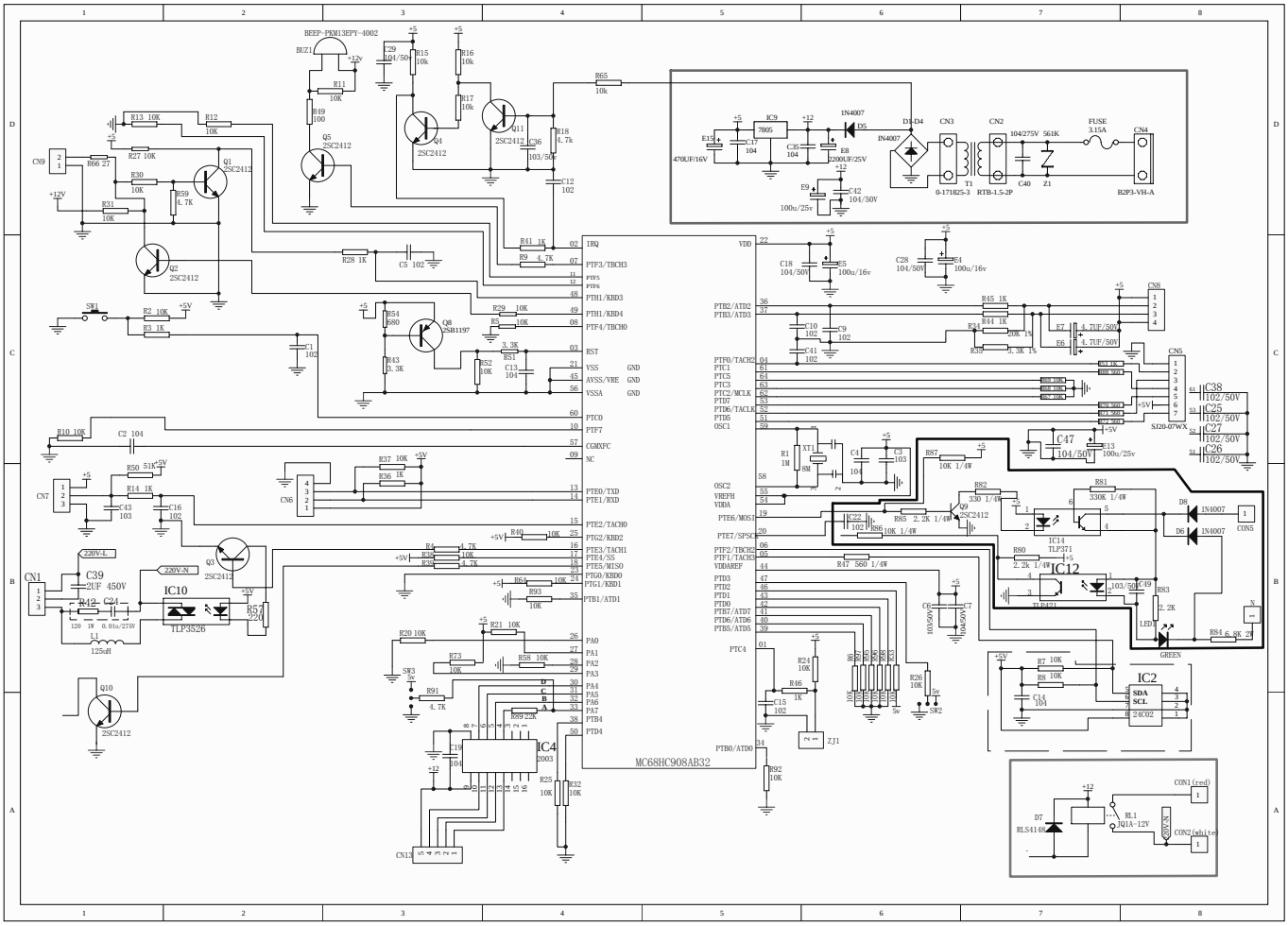

whether terminal CN2 on outdoor PCB contact well?
NO
Pull out the terminals on the outdoor mainboard and reinsert them
YES
Pull the sensor out of the mainboard
5) Measure the value of resistance Between its two jumpers
6) Measure the temperature of outdoor unit A or B's coi
Check the value of the sensor to see whether the sensor is damaged or not?
NO
Sensor is broken,replace it with new sensor
YES
The outdoor PCB is broken, replace a new one

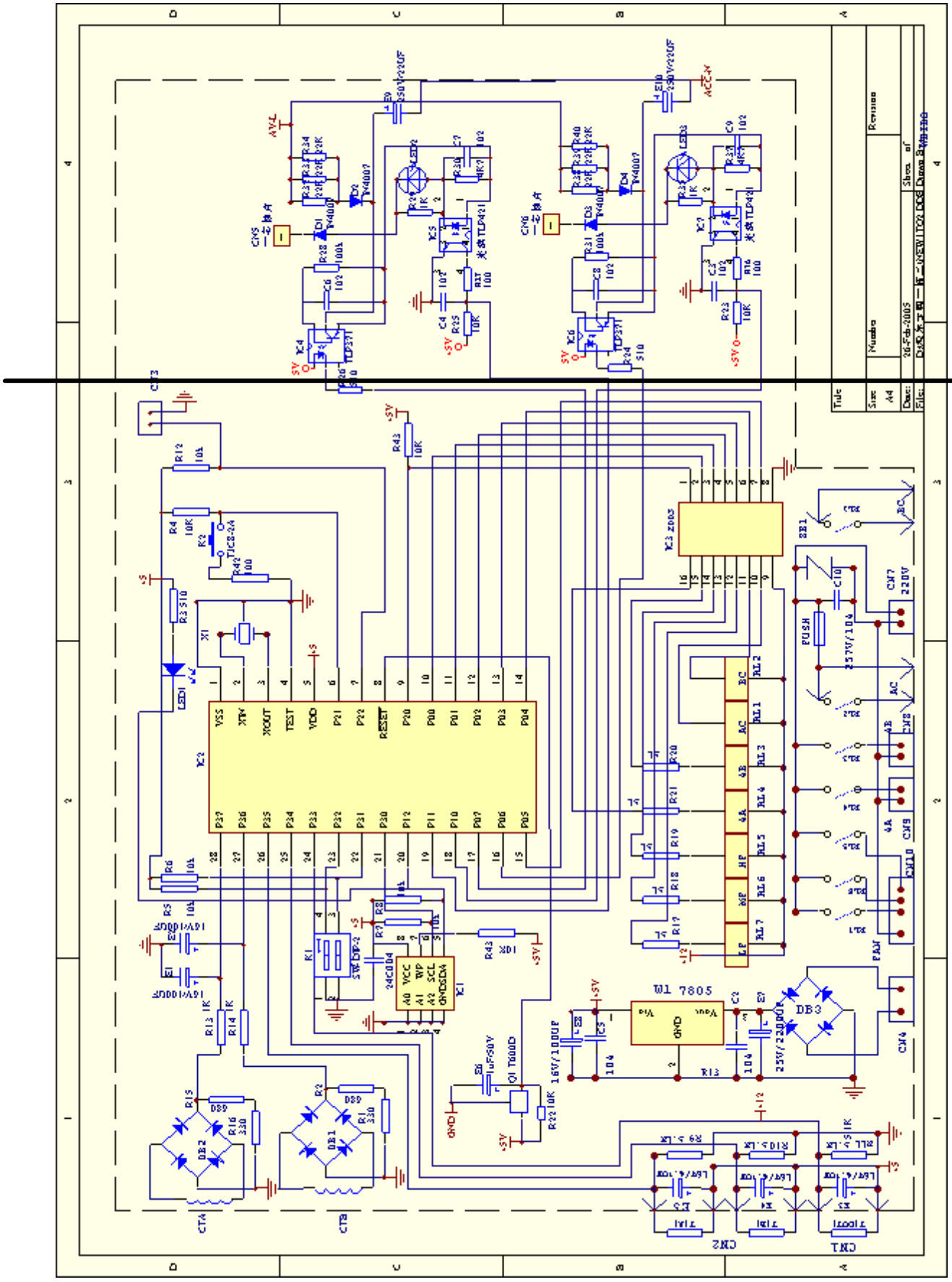
WIRING DIAGRAM


WIRING DIAGRAM OF INDOOR UNIT 0010555641
INDOOR PCB
TRANSFORMER
INDOOR TERMINAL
TO OUTDOOR UNIT
Y/G
W
B
R
Y/G
1
2
3
BL
BL
R
R
CN2
CN3
CN5
CN4
FUSE250VAC T3.15A
CON1
CON2
ION GENERATOR
CN1
FAN MOTOR
CN13
CN5
LOUVER MOTOR
CN8
CN7
SW1
EMERGENCY SWITCH
PIPING TEMP. SENSOR
AMBIENT TEMP. SENSOR
RECEIVING BOARD
NOTES:
THE MODEL WITHOUT THE
FUNCTION OF HEALTH
HAS NOT THE PART OF ①
W: WHITE
BR: BROWN
B: BLACK
Y/G:YELLOW/GREEN
R: RED


0010555642
OUTDOOR DIAGRAM
VALVE-B VALVE-A
CN8
CN9
CN10
FUSE
T3.15A/250VAC
CAPACITOR
COMPRESSOR A
COMPRESSOR B
CAPACITOR
RELAY(RL1)
RELAY(RL2)
CN7 220V-N
CN4
CN3 TEST
CN2
CN1
CN6
CN5
CTA
CTB
FAN MOTOR
CAPACITOR
TRANSFORMER
DEFROST TEMP.SENSOR
AMBIENT TEMP.SENSOR
POWER SUPPLY
TERMINAL BLOCK
B: BLACK BL:BLUE
R: RED WHITE
BR:BROWN
Y/G: YELLOW/GREEN

CIRCUIT DIAGRAM


MC68HC908AB32
IC4
2003
IC10
TLP3526
IC12
TLP371
IC2
24C02
IC9
7805
T1
0-171825-3
RTB-1.5-2P
B2P3-VH-A
SJ20-07WX
TLP421
RLS4148
JQ1A-12V
BEEP-PKM13EPY-4002
1N4007
2SC2412
SDA
SCL
GREEN
LED
CON1(red)
CON2(white)



TROUBLE SHOOTING

Trouble shooting

Before asking for service, check the following first. 50

	Phenomenon	Cause or check points
Normal Performance inspection	The system does not restart immediately.	• When unit is stopped, it won't restart immediately until 3 minutes have elasped to protect the system. • When the electric plug is pulled out and reinserted, the protection circuit will work for 3 minutes to protect the air conditioner.
	Noise is heard	• During unit operation or at stop, a swishing or gurgling noise may be heard. At first 2-3 minutes after unit start, this noise is more noticeable. (This noise is generated by refrigerant flowing in the system.) • During unit operation, a cracking noise may be heard. This noise is generated by the casing expanding or shrinking because of temperature changes. • Should there be a big noise from air flow in unit operation, air filter may be too dirty.
	Smells are generated.	• This is because the system circulates smells from the interior air such as the smell of furniture, cigarettes.
	Mist or steam are blown out.	• During COOL or DRY operation, indoor unit may blow out mist. This is due to the sudden cooling of indoor air.
Multiple check	Does not work at all.	• Is power plug inserted? • Is there a power failure? • Is fuse blown out?
	Poor cooling	• Is the air filter dirty? Normally it should be cleaned every 15 days. • Are there any obstacles before intel and outlet? • Is temperature set correctly? • Are there some doors or windows left open? • Is there any direct sunlight through the window during the cooling operation?(Use curtain) • Are there too much heat sources or too many people in the room during cooling operation?

Application temp. range of air conditioner -7°C～43°C.

REFRIGERATING-CYCLE DIAGRAM

Warning and cautions:

1.1 The multi-mounted split unit adopts double separated cooling systems (A and B) that are not connected together. If the refrigerant leaks, the leaking system of them must be determined. So we can solute the abnormality. And refill the system that lacks refrigerant. It will influence the effect if the A and B systems are wrongly estimated.

1.2 The maximum length of single connecting pipe is 7m. And the units can't run normally if the pipe is over required length.

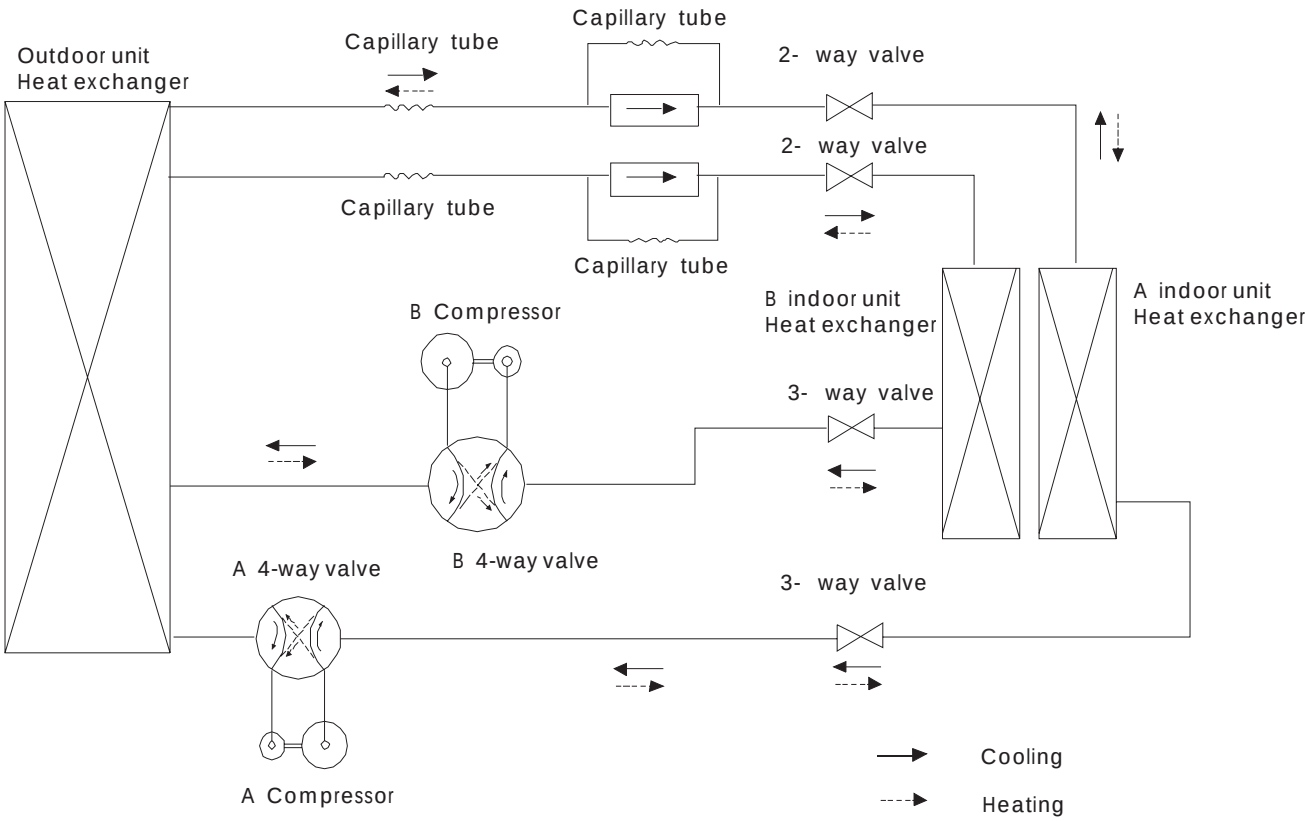
1.3 Fill refrigerant in accordance with the diagram below if the connecting pipe is over 5m.

Length	5m	7m	----
Refrigerant charge	NO	40g	---

(1)Vacuum pumping of the system

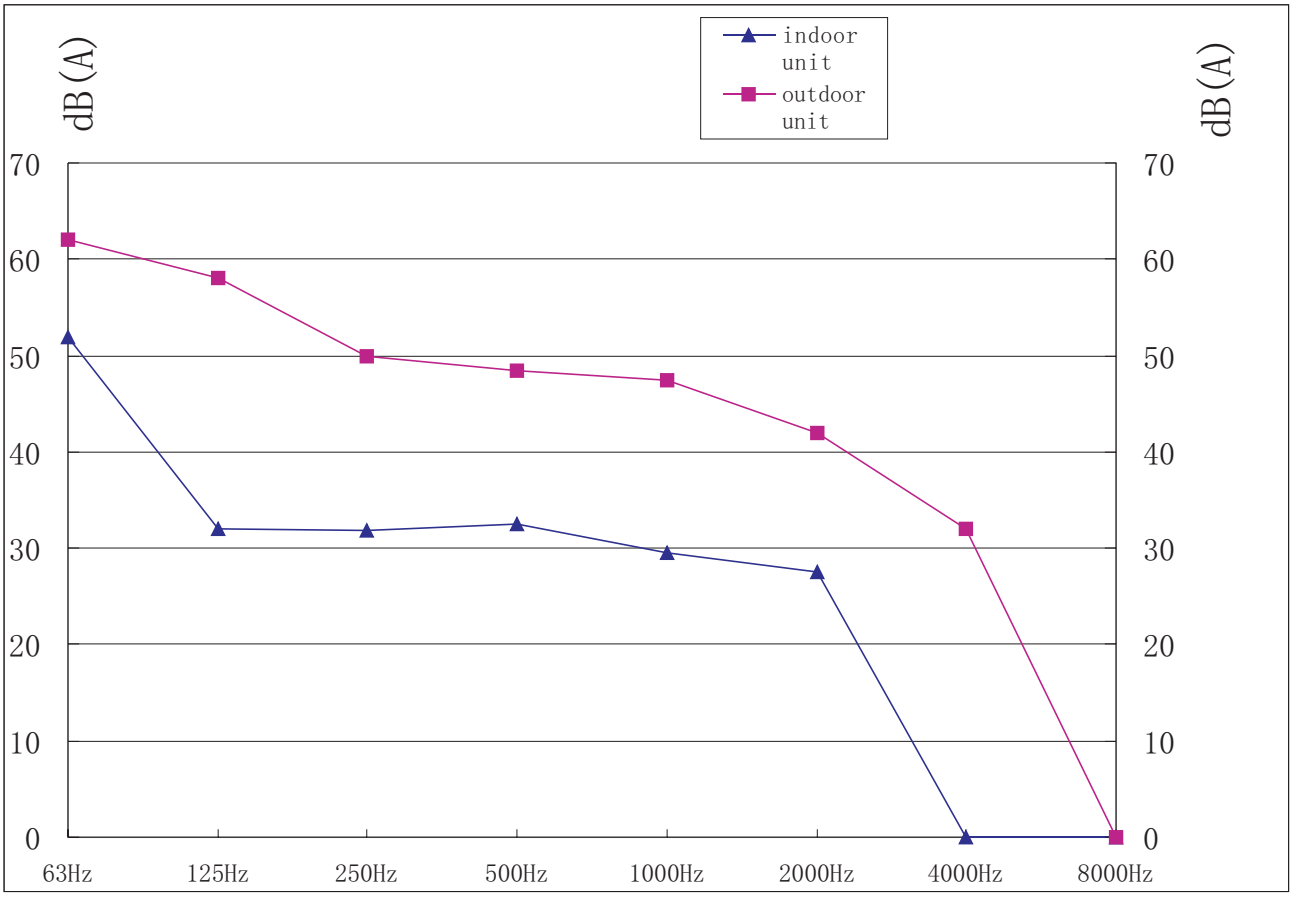
Vacuum pumping is to mainly draw out residual air and water in the air conditioner refrigerant system. Generally vacuum pump is connected at the processing port of the 3-way stop valve in the outdoor unit. The system vacuum degree is required to be below 200 Pa.

(2) Refrigerating-cycle diagram:



NOISE LEVEL TEST CHART

& AIR VELOCITY DISTRIBUTION


indoor unit
outdoor unit
dB (A)
dB (A)
70
60
50
40
30
20
10
0
63Hz
125Hz
250Hz
500Hz
1000Hz
2000Hz
4000Hz
8000Hz

B.Air velocity distribution

Condition
Fan speed: high
Operation mode: Fan
Voltage : 230V
50Hz mode

Fig 1
Top View
Flow Control Panel: Horiz.
Louver: Center

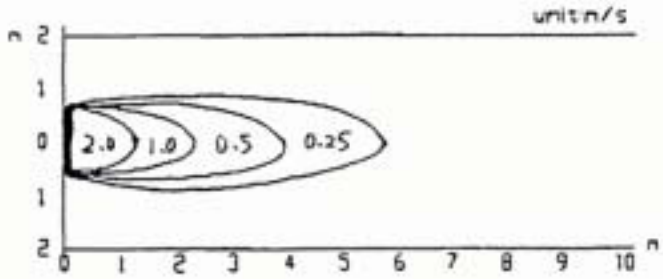


Fig 2
Top View
Flow Control Panel: Horiz.
Louver: right & left

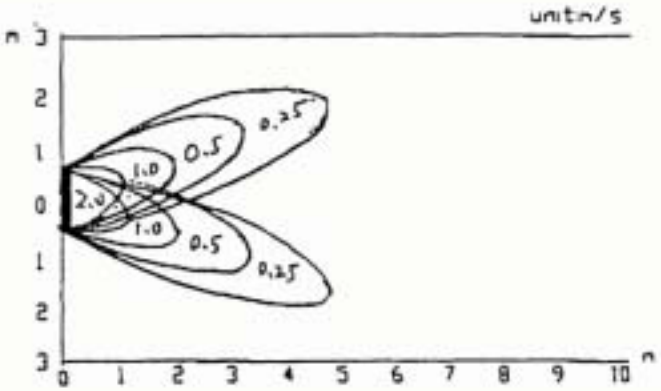


Fig 3
Side View
Flow Control Panel: Horiz.
Louver: Center

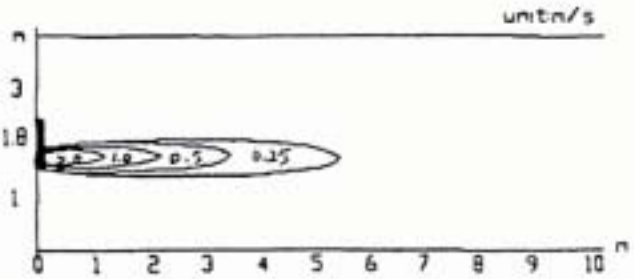
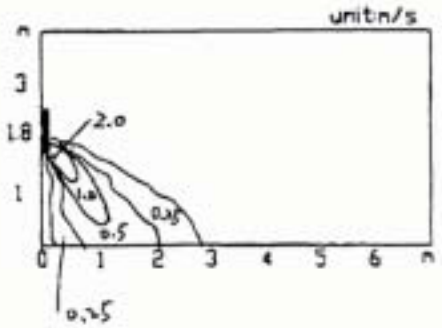


Fig 4
Side View
Flow Control Panel: Vert.
Louver: Center



INSTALLATION & MAINTENANCE

- Read this manual before installation.
- Explain sufficiently the operating means to the user according to this manual.

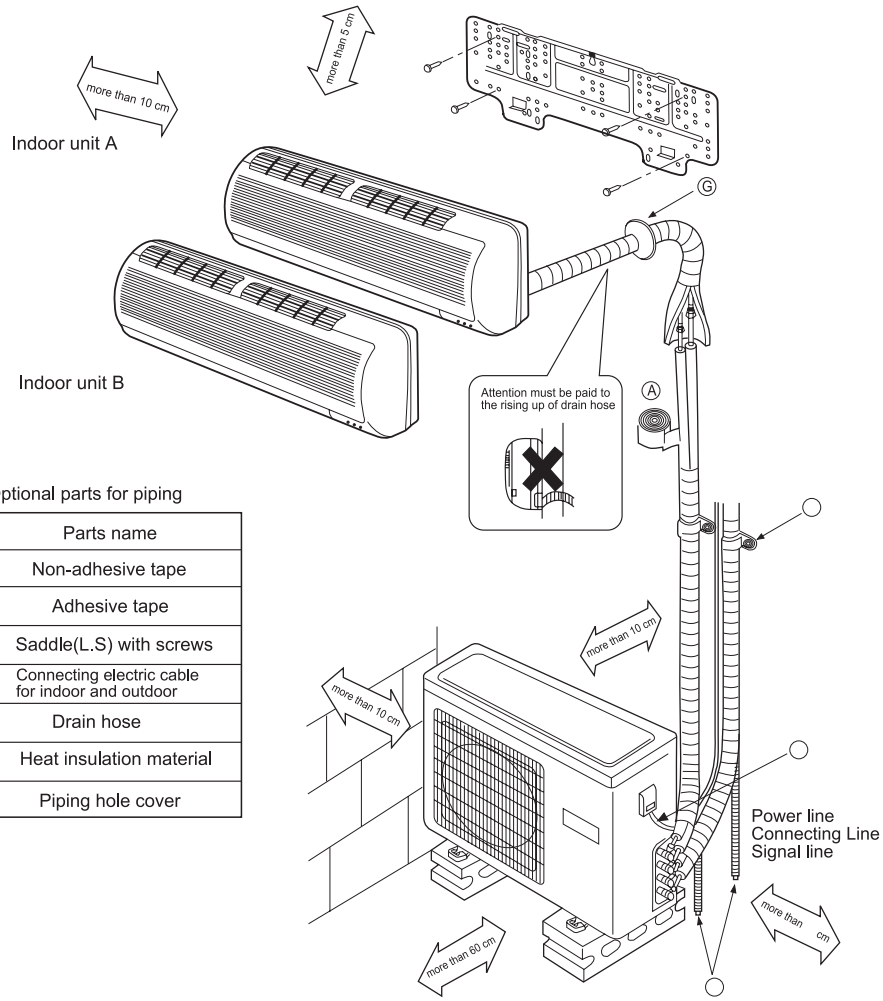
Necessary Tools for Installation

1. Driver
2. Hacksaw
3. 60mm diameter hole core drill
4. Hexagon wrench (5mm)
5. Spanner (14,17,19, 27mm)
6. Torque wrench (17mm,22mm,24mm)
7. Pipe cutter
8. Flaring tool
9. Knife
10. Nipper
11. Gas leak detector or soap-and-water solution
12. Measuring tape
13. Reamer
14. Refrigeration oil

parts in same packing for indoor unit

No.	Accessory parts	Number of articles
①	Remote controller	2
②	R-03 dry battery	4
③	Mounting plate	2
④	Drain hose	2
⑤	Pipe supporting plate	2
⑥	φ4X50 Steel nail, cement	
⑦	Drain-elbow	1
⑧	Main pipes	1
⑨	φ4X25 Screw; Plastic cap	
⑩	Cover	2
⑪	Cushion	4
◯	Connecting cable	2

Drawing for the installation of indoor and outdoor units

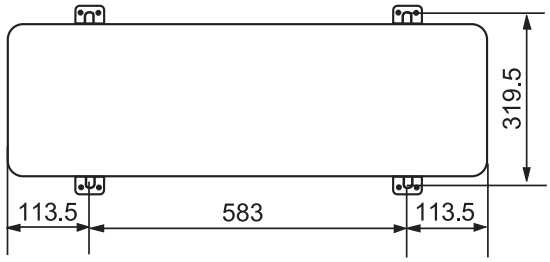


Optional parts for piping

Mark	Parts name
Ⓐ	Non-adhesive tape
Ⓑ	Adhesive tape
Ⓒ	Saddle(L.S) with screws
Ⓓ	Connecting electric cable for indoor and outdoor
Ⓔ	Drain hose
Ⓕ	Heat insulation material
Ⓖ	Piping hole cover

※ The numerical signs from ① to ⑪ and the marks from Ⓐ to Ⓗ in the figure are the parts' numbers

Fixing of outdoor unit



Floor fixing dimensions of the outdoor unit
(Unit: mm)

- Fix the unit to concrete or block with bolts (ϕ10mm) and nuts firmly and horizontally.
- When fitting the unit to wall surface, roof or rooftop, fix a supporter surely with nails or wires in consideration of earthquake of strong wind.
- If vibration may affect the house fix the unit by attaching a vibration-proof mat.

Indoor Unit Selection of Installation Place Outdoor Unit

- Place, robust not causing vibration, where the body can be supported sufficiently.
- Place, not affected by heat or steam generated in the vicinity, where inlet and outlet of the unit are not disturbed.
- Place, possible to drain easily, where piping can be connected with the outdoor unit.
- Place, where cold air can be spread in a room entirely.
- Place, nearby a power receptacle, with enough space around. (Refer to drawings).
- Place where the distance of more than 1m from televisions, radios, wireless apparatuses and fluorescent lamps can be left.
- In the case of fixing the remote controller on a wall, place where the indoor unit can receive signals when the fluorescent lamps in the room are lightened.
- Place, which is less affected by rain or direct sunlight and is sufficiently ventilated.
- Place, possible to bear the unit, where vibration and noise are not increased.
- Place, where discharged wind and noise do not cause a nuisance to the neighbors.
- Place, where a distance marked ⇔ is available as illustrated in the above figure.
- Height diff between indoor and outdoor units should be kept within 5 meters.
- Place where the distance of more than 3 meters from antenna of TV set or radio telegraphy is available.

Power Source

- Before inserting power plug into receptacle, check the voltage without fail. The power source is the same as the corresponding name plate.
- Install an exclusive branch circuit of the power.
- A receptacle shall be set up in a distance where the power cable can be reached. Do not extend the cable by cutting it.

Selection of Pipe

- To this unit, both liquid and gas pipes shall be insulated as they become low temperature in operation.
- Piping length: Total length of piping less than 20 meters with A, B unit less than 15 meters on individual unit.

Piping size	Liquid pipe (ϕ)	6.35mm (1/4") x 0.8mm
	Gas pipe (ϕ)	9.52mm(") x 0.8mm

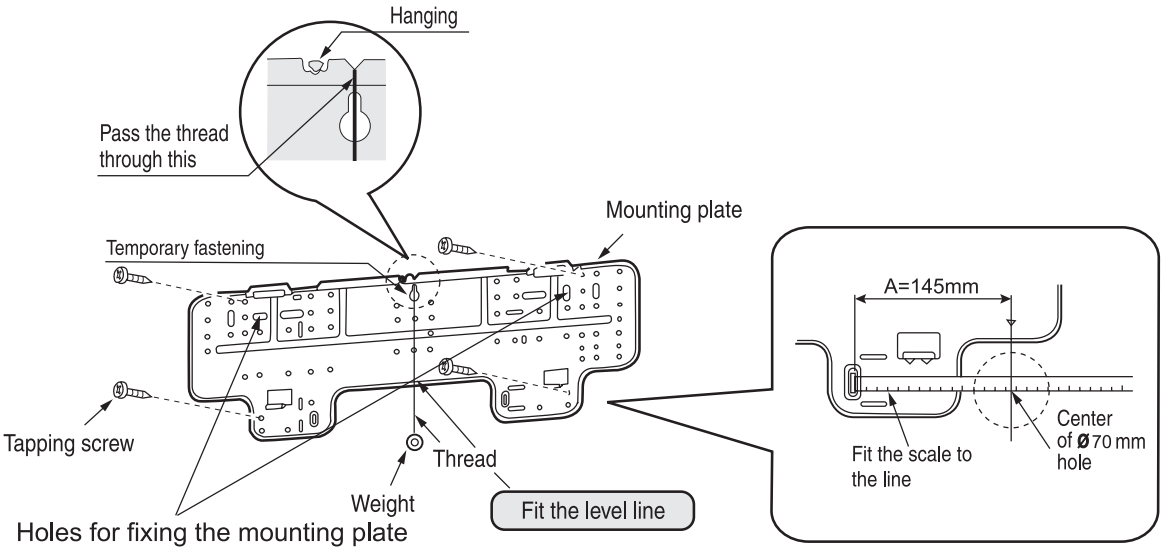
1 Fitting of the Mounting Plate and Positioning of the Wall Hole

When the mounting plate is first fixed

1 Carry out, based on the neighboring pillars or lintels, a proper leveling for the plate to be fixed against the wall, then temporarily fasten the plate with one steel nail.

2 Make sure once more the proper level of the plate, by hanging a thread with a weight from the central top of the plate, then fasten securely the plate with the attachment steel nail.

3 Find the wall hole location A using a measuring tape.

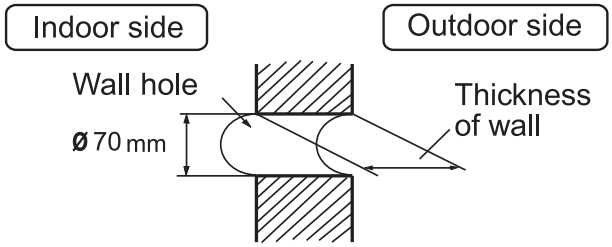


When the mounting plate is fixed to side bar and lintel

- Fix to side bar and lintel a mounting bar, Which is separately sold, and then fasten the plate to the fixed mounting bar.
- Refer to the previous article, "When the mounting plate is first fixed", for the position of wall hole.

2 Making a Hole on the Wall and Fitting the Piping Hole Cover

- Make a hole of 70 mm in diameter, slightly descending to outside the wall.
- Install piping hole cover and seal it off with putty after installation.



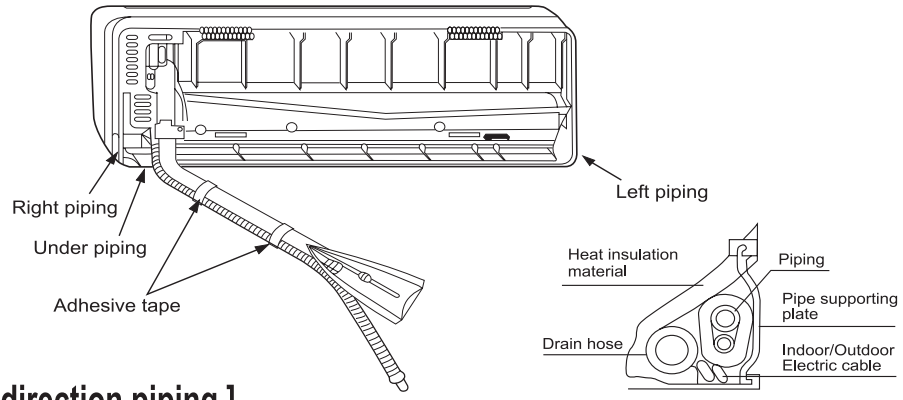
(Section of wall hole) Ⓖ Piping hole pipe

3 Installation of the Indoor Unit

Drawing of pipe

[Rear piping]

- Draw pipes and the drain hose, then fasten them and connecting electric cable for indoor and outdoor with the adhesive tape.
- Drain hose should be placed under.



[Other direction piping]

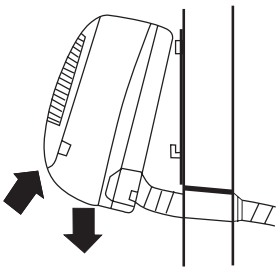
- Cut away, with a nipper, the lid for piping according to the piping direction and then bend the pipe according to the position of wall hole. When bending, be careful not to crash pipes.
- Connect beforehand the indoor/outdoor electric cable, and then pull out the connected to the heat insulation of connecting part specially.

[Installation of piping support plate]

- Insert the plate, from top, into the piping to be fixed.
- Push its button hard until you hear a clik.

Fixing the indoor unit body

- Hang surely the unit body onto the upper notches of the mounting plate. Move the body from side to side to verify its secure fixing.
- In order to fix the body onto the mounting plate, hold up the body aslant from the underside and then put it down perpendicularly.



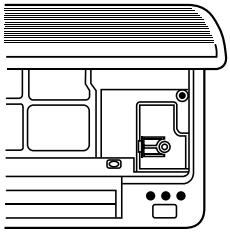
4 Connecting the Indoor / Outdoor Electric Cable

[Cautions]

1. Make sure it is unit A or unit B, when make wiring.
2. Unit to be connected to stop valve A on outdoor unit is unit A , while the one to be connected to stop valve B is unit B.
3. Refer to wiring diagram.

Removing the wiring cover

Open the inlet grill, then remove one screw of the cover.

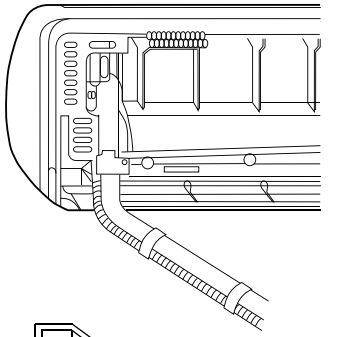


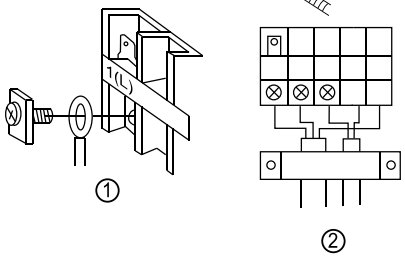
When connecting the cable after installing the indoor unit

- Insert cable and signal wire from outside of pipe hole in which pipe has already existed.
- Pull out the cable on the front side, and connect the cable making a loop.

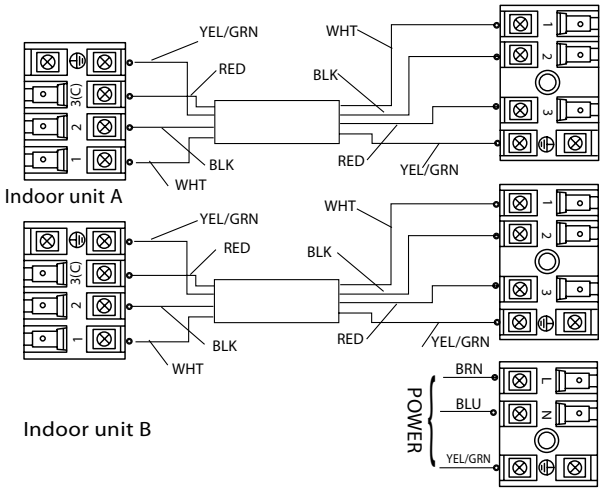
When connecting the cable before installing the indoor unit

- Insert the cable from the back side of the unit, then pull it out on the front side.
- Loosen the screws and insert the cable ends fully into terminal block, then tighten the screws.
- Pull the cable slightly to make sure the cables have been properly inserted and tightened light.
- After the cable connection, never fail to fasten the connected cable with the wiring cover.





Note:When connecting the cable, confirm the terminal number of indoor and outdoor units carefully. If wiring is not correct, proper operation can not be carried out and will cause defect.

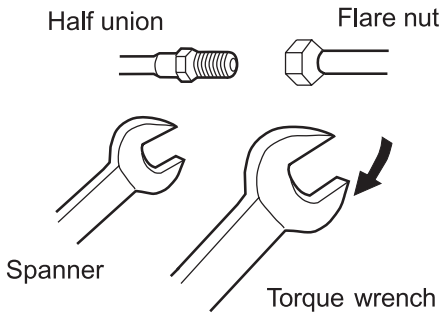


1 Installation of Outdoor Unit

Install according to **Drawing for the installation of indoor and outdoor units**

2 Connection of Pipes

- To bend a pipe, give the roundness as large as possible not to crush the pipe ,and the bending radius should be 30 to 40 mm or longer.
- Connecting the pipe of gas side first makes working easier.
- The connection pipe is specialized for R410A
- The max vertical distance between the indoor uint and the outdoor unit is 5 m



Forced fastening without careful centering may damage the threads and cause a leakage of gas.

Pipe Diameter (ϕ)	Fastening Torque
Liquid Side 6.35mm(1/4")	18N.m
Gas Side 9.52mm(3/8")	42N.m
Gas Side 12.7mm(1/ 2")	55N m

Be careful that matters, such as wastes of sands, etc. shall not enter the pipe. The standard pipe length is 5m. If it is over 5m, the function of the unit will be affected. If the pipe has to be lengthened, the refrigerant should be charged, according to 20 g/m. But the charge of refrigerant must be conducted by professional air conditioner engineer. Before adding additional refrigerant, perform air purging from the refrigerant pipes and indoor unit using a vacuum pump,then charge additional refrigerant.

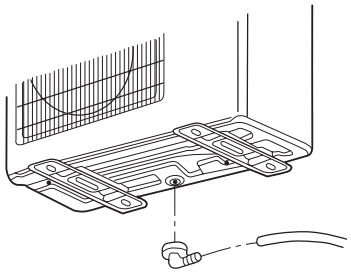
3 Connection

- Use the same method on indoor unit. Loosen the screws on terminal block and insert the plugs fully into terminal block, then tighten the screws.
- Insert the cable according to terminal number in the same manner as the indoor unit.
- If wiring is not correct, proper operation can not be carried out and controller may be damaged.
- Fix the cable with a clamp.

4 Attaching Drain-Elbow

- If the drain-elbow is used, please attach it as figure.

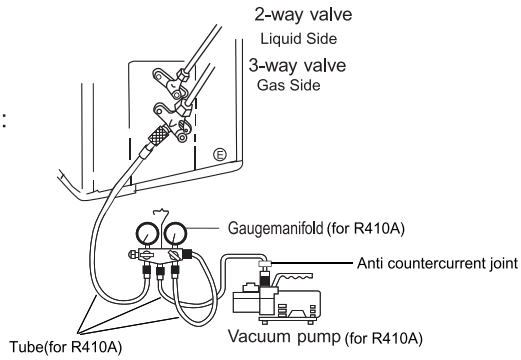
Note: Only for heat pump unit.



5 Purging Method: To use vacuum pump

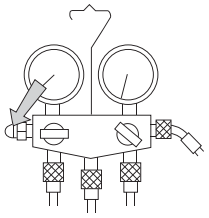
Push the air out of the indoor unit A and piping as followes:

① Detach the service port's cap of 3-way valve, the valve rod's cap for 2-way valve and 3-way's, connect the service port into the projection of charge hose (low) for gaugemanifold. Then connect the projection of charge hose (center) for gaugemanifold into vacuum pump.



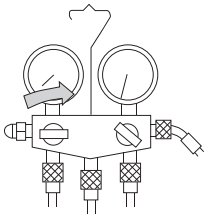
② Open the handle at low in gaugemanifold, operate vacuum pump. If the scale-moves of gause (low) reach vacuum condition in a moment, check ① again.

② Open

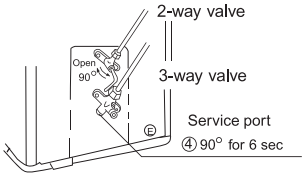


③ Vacuumize for over 15min. And check the level gauge which should read -0.1 MPa (-76 cm Hg) at low pressure side. After the completion of vacuumizing, close the handle 'Lo' in gaugemanifold and stop the operation of the vacuum pump.
Check the condition of the scale and hold it for 1-2min. If the scale-moves back in spite of tightening, make flaring work again, the return to the beginning of ③.

③ Close



④ Open the valve rod for the 2-way valve to an angle of anticlockwise 90 degrees .
After 6 seconds , close the 2-way valve and make the inspection of gas leakage.

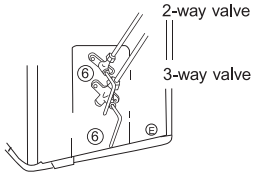


⑤ No gas leakage?

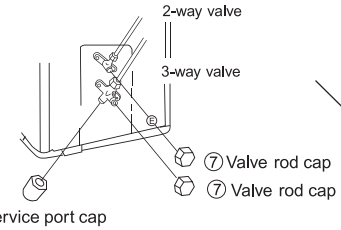
In case of gas leakage, tighten parts of pipe connection. If leakage stops, then proceed ⑥ steps.

If it does not stop gas leakage, discharge whole refrigerants from the service port. After flaring work again and vacuumize, fill up prescribed refrigerant from the gas cylinder.

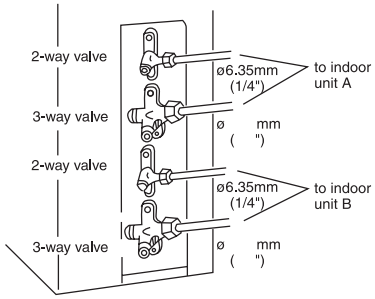
⑥ Detach the charge hose from the service port, open 2-way valve and 3-way. Turn the valve rod anticlockwise until hitting lightly.



⑦ To prevent the gas leakage, turn the service port's cap, the valve rod's cap for 2-way valve and 3-way's a little more than the point where the torque increases suddenly.



⑧ After attaching the each caps, check the gas leakage around the caps.



CAUTION:

1.If the refrigerant of the air conditioner leaks, it is necessary to discharge all the refrigerant . Vacuumize first, then charge the liquid refrigerant into air conditioner according to the amount marked on the name plate.

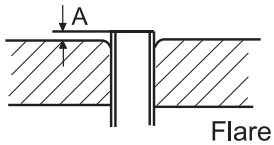
2.Please do not let other cooling medium, except specified one (R410A) , or air enter into the cooling circulation system. Otherwise, there will be abnormal high pressure in the system to make it crack and lead to personal injuries.

1 Power Source Installation

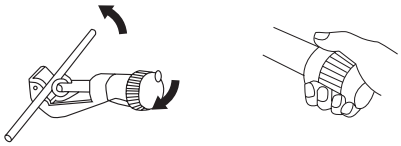
- The power source must be exclusively used for air conditioner. (Over 10A)
- In the case of installing an air conditioner in a moist place. please install an earth leakage breaker.
- For installation in other places, use a circuit breaker as far as possible.

2 Cutting and Flaring Work of Piping

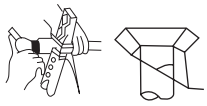
- Pipe cutting is carried out with a pipe cutter and burs must be removed.
- After inserting the flare nut, flaring work is carried out.



Flare tooling die

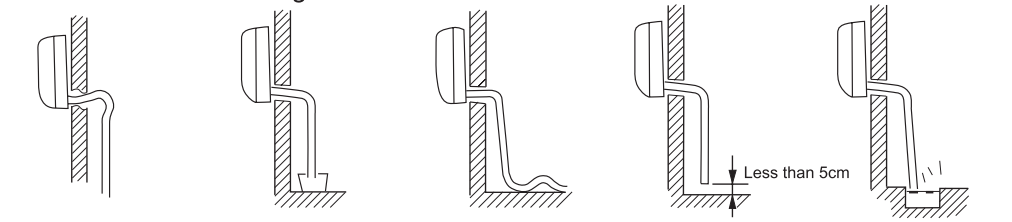


Correct	Incorrect				
	Lean	Damage of flare	Crack	Partial	Too outside



3 On Drainage

- Please install the drain hose so as to be downward slope without fail.
- Please don't do the drainage as shown below.



It becomes high midway. The end is immersed in water. It waves. The gap with the ground is too small. There is the bad smell from a ditch.

- Please pour water in the drain pan of the indoor unit, and confirm that drainage is carried out surely to outdoor.
- In case that the attached drain hose is in a room, please apply heat insulation to it without fail.

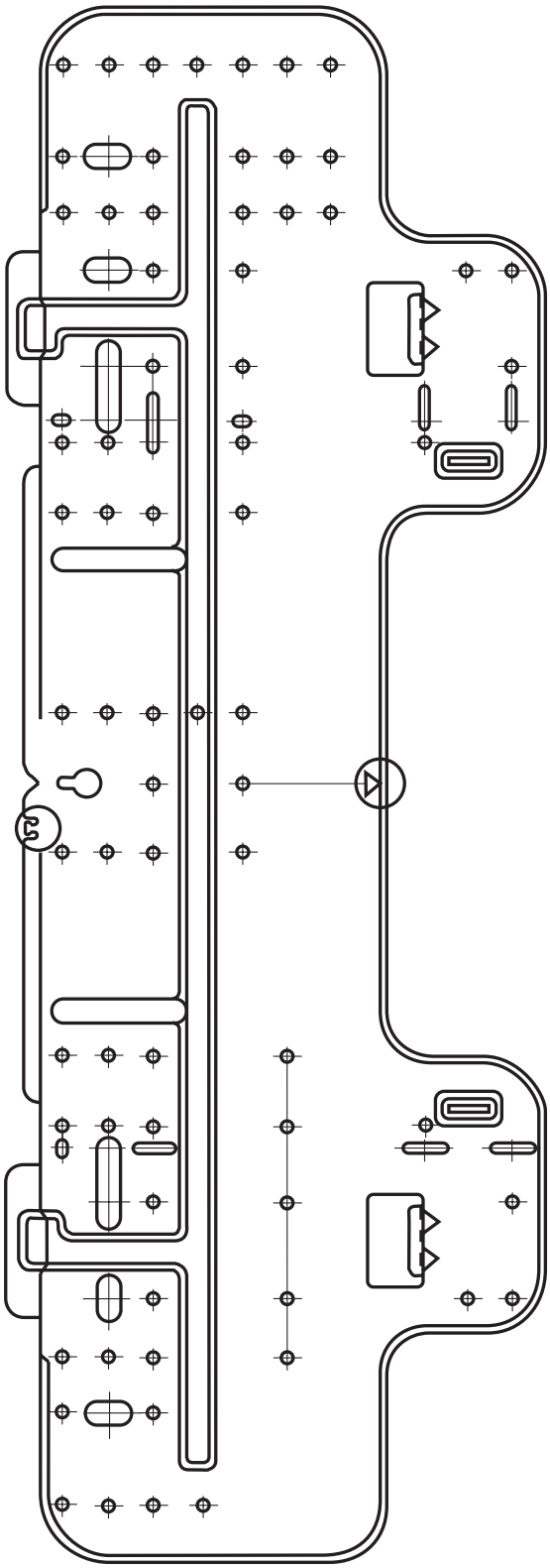
Check for Installation and Test Run

- Please kindly explain to our customers how to operate through the instruction manual.

Check Items for Test Run

☐ Put check mark ✓ in boxes

- ☐ Gas leak from pipe connecting?
- ☐ Heat insulation of pipe connecting?
- ☐ Are the connecting wirings of indoor and outdoor firmly inserted to the terminal block?
- ☐ Is the connecting wiring of indoor and outdoor firmly fixed?
- ☐ Is drainage securely carried out?
- ☐ Is the earth line securely connected?
- ☐ Is the indoor unit securely fixed?
- ☐ Is power source voltage abided by the code?
- ☐ Is there any noise?
- ☐ Is the lamp normally lighting?
- ☐ Are cooling and heating (when in heat pump) performed normally?
- ☐ Is the operation of room temperature regulator normal?



Leave at Least 50mm between the top of the unit and the ceiling

- Paper Pattern for Indoor Unit Installation
  Please use this sheet to site the unit